PHILADELPHIA, JANUARY 28, 1882.

ORIGINAL LECTURES.

CLINICAL LECTURE ON PAIN IN THE SIDE.

Delivered at the Medico-Chirurgical College

BY HUGO ENGEL, A.M., M.D.,

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GENTLEMEN,—I thank you that you have appeared in such large numbers here to-day, as it repays my assistants and me for our exertions in procuring as many cases as possible which might give me an opportunity to illustrate on them the many varieties of "pain in the side," and to show you how to proceed in their examination.

STITCH IN THE SIDE AFTER RUNNING.

This little girl, Clara F., is 10 years old. She has had whooping-cough, measles, scarlet-fever, chicken-pox, and mumps, nearly all the so-called "diseases of childhood," therefore, and passed safely through all of them. For the last two years she has been in perfect health, with the single exception that she frequently complains of a stitch in the left side. So her mother informs us. On my questioning the little girl, you hear her tell me that this pain is by no means constant, that she never feels it when sitting quietly, but that she has it as soon as she runs fast. The most careful examination fails to reveal any organic lesion in the child: she suffers from no neuralgia and from no muscular affection either. What, then, is this stitch due to? Gentlemen, you are aware that the spleen has something to do with the manufacture of the blood; but especially in childhood this organ seems to act also, when necessity arises, as a reservoir for the blood. When in consequence of long-continued and fast running the respiration becomes very rapid, and the increased circulation in the lung threatened with obstruction, the heart beating so quickly that you hardly are able to count the pulse, I have found the spleen increasing considerably in volume, and then the tension produced by this sudden augmentation in size creates that sharp pain commonly called a stitch in the side, which is simply a warning of nature that the exertion is being carried on beyond the limits of safety. This pain is mostly so severe—though lasting only a second, but recurring all the time as long as the exertion continues, and for a little while after it—that the child is forced to stop running, just the best thing for it to do. After quietly resting for a little time, the stitches rapidly cease, and just as quickly the spleen is emptied of the blood that accumulated there, and assumes again its normal size. Occasionally a very similar pain is produced in consequence of gases in the colon finding an impediment to their exit. As the obstruction is overcome, however, mostly within a second or two, this pain is of no longer duration than the stitch in the side of this little girl, though just as sharp. As regards treatment, the only one we have for our patient consists in the removal of the cause: she must stop running so fast, and she will feel no more of her pain.

PLEURODYNIA.

The man before you here is 42 years old. His name is John McG. He looks rather thin, and is evidently not well nourished. His occupation is that of a weaver, but for some days he has not been able to attend to his work, on account of a severe pain he feels in his left side, and which prevents him from taking a deep breath. He says he had often a similar pain during cold weather, and that he sometimes suffers from pain on the left side of his face, evidently neuralgia of the fifth nerve. There is no history of syphilis or malaria. On examination, I cannot detect anything wrong, either on percussion or on auscultation. But pressing with my finger on the skin just to the left of the seventh dorsal vertebra, and in the axillary line at the lower edge of the seventh rib of the same side, there is tenderness; the patient winces, and says that he feels the pain especially along that rib. We have here, first, an absence of organic lesion; secondly, a pain intermitting in character and following the course of an intercostal nerve; thirdly, there are *points douloureux*, special sensitive points, where the nerve makes its exit from a bony canal; and, lastly, the patient gives a history of neuralgia. The points just mentioned are the essential features of intercostal neuralgia or pleurodynia, a complaint which sometimes

reaches a high degree of severity. And as the nerve is still more irritated when on deep inspiration the cavity of the chest is widened, respiration is generally more superficial, and, therefore, somewhat more rapid, and the pain is apt to be deceiving, simulating internal organic affection. But the points given, and a careful physical exploration, will always enable you to arrive at a correct diagnosis. Romberg said truly, neuralgia is the cry of the nerves for food. The more you bear this maxim in mind, the greater will be the success of your treatment. We will advise the patient, therefore, to lead a regular life, take wholesome nourishment, and have a sufficient amount of out-door exercise; whenever his bowels have not moved one day, he shall take a Seidlitz powder the next morning on the empty stomach, or a dose of castor oil, if the remedy first mentioned should not be sufficient: we will further prescribe the following pill to be taken *ter die*, one hour before meals:

℞ Ferri redacti, gr. j;
Acid. arseniosi, gr. $\frac{1}{86}$;
Extr. gentianæ, gr. ss;
Extr. nucis vomic., gr. ¼;
Extr. cinchon. rubræ, gr. iiss;
Gum. acaciæ,
Glycerin., āā q. s. ut fiat pilula;

and order him to have a small fly-blister applied over each of the two sensitive points. Should afterwards any pain still be left, we will give him a porous belladonna-plaster, to be left on the skin till all pain has disappeared, or the plaster fallen off by itself. I can recommend these English porous belladonna-plasters very highly for the purpose indicated. They have, when genuine, a beautiful green color, and act very promptly. In some patients, who have either a "rapidly-absorbing" skin or a peculiar idiosyncrasy for belladonna, you have to watch carefully the effect of the plaster and remove it immediately when continuous dilatation of the pupils, disturbance of vision, great dryness of the throat, and headache with sleepiness set in. Such cases are rare, but they happen occasionally.

CHRONIC MUSCULAR RHEUMATISM.

Looking at this gentleman, Mr. M., a private patient of mine, who kindly consented to come here to-day, nobody would imagine that he suffers from any physical ailment. But, notwithstanding this appearance of robust health, Mr. M suffers, and not a little, from a pain mostly on the left side over the region of the heart, but frequently extending across the chest. Mr. M. says that he has often had similar pains, and that he felt them the first time about four years ago (he is now forty-eight years old), when he one day got thoroughly wet and had to wait some hours before he could change his clothing. Since that time he has occasionally pains in his thighs, or about the shoulder, in the arms, the back, or across the chest; but to-day the region over his heart is especially painful, and breathing is difficult for him, because he cannot expand his chest-muscles,—they are too sore. I have examined Mr. M. carefully, and can assure you that none of his internal organs is the seat of a lesion. What, then, is the cause of the pain? You have here a history of exposure to damp and cold, after which different parts of the body become at different times affected with pain. The pain is diffused over a muscle, or over a set of muscles, and is decidedly increased on motion. It does not follow the course of a nerve, and is greatly influenced by changes in the weather. Mr. M. further informs us that his father suffered for many years from the same complaint, but that he was cured of it by taking the baths at Kissingen. Gentlemen, when you find a pain diffused over a muscle, a history of hereditary influence, of exposure to cold and wet, and of repeated attacks, if the pain is influenced by changes in the weather and increased on motion, *i.e.*, on moving the muscle or muscles affected, then you have the disease known as chronic muscular rheumatism. You distinguish it from neuralgia by the pain being diffused over a muscle, not following the course of a nerve, and by its being decidedly increased on motion; from myalgia, which simply means pain of a muscle, by the history of the same, it always following an overexertion, a strain of the muscle; and from all other rheumatic or gouty affections, in that both the latter invariably attack joints, but not muscles. Chronic muscular rheumatism is not a dangerous, but often a very troublesome complaint, which is best cured by the patient taking the baths of Kissingen, Gastein, the Hot Springs of Arkansas, or of similar places. Internally I have found the following prescription to be the most successful:

℞ Potassii iodidi, ℥ss;
Vini seminis colchic. (Angl.), f℥ss;
Syrup. sarsapar. comp., f℥iv.
M. S.—F℥i ter die,

but largely diluted with water, and the wine of the seed of colchicum must be the imported English article, as they make it in England from the fresh seeds, while here it is prepared from the dried seeds. Externally, the application of porous plaster, or Turkish baths with massage, or stimulating liniments, prove often of service. If the pain seems to affect always one place in preference, the hypodermic injection of ⅙ of a grain of morphia and $\frac{1}{120}$ of a grain of atropia will frequently remove it from that muscle forever. I can further recommend the wearing of red flannel underclothing next to the skin, and know a number of cases where this procedure alone has prevented a return of the rheumatic affection.

SYPHILITIC PERIOSTITIS.

You will notice the difficulty with which this young man is breathing. His name is Charles L.; 23 years of age. He says that he has such a severe pain over the breast-bone and on both sides of it that he is almost afraid to draw a breath; it seems to him as if his chest were torn to pieces. The pain commenced about two weeks ago, and has daily increased in severity. It becomes especially bad towards evening, and is worst during the night, while in the morning it is less intense. On examination I find the organs of the chest in a normal condition, but on inspection and palpation I notice a thickening of the integument over the sternum and partly over the ribs, and great tenderness all over the anterior part of the thorax. A more careful investigation shows, however, that not the skin, but the periosteum covering the bones is thickened. You will hear directly the cause of this. "Mr. L., tell me the truth, when did you have a sore on your genital organs?" "Five years ago." "Were there more sores than one?" "No, sir; only one little sore." Gentlemen, the patient is evidently surprised by my questions, and tries to make it as little as possible, not knowing that the fact of the existence of only one sore just proves the dangerous character of it. Hard chancres are vastly more perilous than multiple, soft chancres, so-called chancroids, though the latter, too, are often followed by constitutional affection. "Did you have a swelling in your groin, and how long after the appearance of the chancre?" "About two weeks after noticing the sore I had the swelling, which went away of itself later." "How long after this did you observe an eruption on your skin?" "About two or three months later." "Had you any other symptoms of syphilis?" "I had a sore throat, and sores on my tongue and lips, and my hair fell out; but I was totally cured of all that." "Did you never have any pain or any sore on your body after that till now?" "No, sir; I never had anything. Why, has this pain also to do with that disease?" "Certainly, Mr. L.; that is all the same disease." Gentlemen, you have heard just now a clear history of syphilis: first the primary sore, then the bubo, and this followed by all the signs of secondary syphilis. The patient must have been treated very skilfully the last time, as he has been free now for four years before any symptoms of tertiary syphilis—for that is his affection—made their appearance. Frequently such persons escape the tertiary form totally; but it is rare not to find the so-called osteocopic pains long before such violent inflammations of the periosteum of the bones as in the present case develop themselves. We have, therefore, here, as cause of the patient's severe pain, syphilitic periostitis. The history of the case, the fact of the symptoms becoming aggravated towards night, and the local condition of the parts affected leave no room for a doubt; and, besides, the correctness of the diagnosis will be proved by the success of the specific treatment which the patient will be put under. We shall advise him to apply a large fly-blister, about eight inches in diameter, over the sternum and the ribs, and to take of the following medicine:

℞ Potassii iodidi, ℥j;
Aquæ destillat., f℥v;
Syrup. sarsapar. comp., f℥j.
M. S.—As directed.

For the first two days two teaspoonfuls (= 20 grains), and then a tablespoonful (= 40 grains), largely diluted with water, three times daily, two hours after meals.

Should this dose not be sufficient to remove the symptoms, it will be still further increased until the desired result is obtained. The mistake frequently made consists in the administration of too small doses of the iodide of potassium. I had

frequently to give one drachm and more, three times daily, ere the patient was free of his tertiary symptoms. When apparently well, he should continue the medicine in gradually diminished doses for a long time afterwards; and it has been my practice to advise such people to take as a precautionary measure, twice a year,—in the spring and in the autumn,—twenty grains of the remedy, three times daily, for the period of three weeks, and to continue doing this during the remainder of their lives. I know to-day a number of persons who, following this advice, have had for years no further trouble from the disease, and the children of whom have given no sign of a hereditary taint of their system.

DYSPEPSIA.

The ladies generally come first, but in a clinic we often have to follow a different order. This lady, Mrs. Annie V., will tell us what she is complaining about. She says she is 39 years old, and has been suffering for a long time—she does not know exactly how long—from a pain in her left side. It is in her heart, she believes, from the fact that she is frequently troubled with palpitation. But these are not all her symptoms. She has sometimes shortness of breath, especially after eating, when she feels as if a heavy weight were pressing on her stomach. She belches often, and her bowels are inclined to constipation; she has not much appetite, and does not relish her food. Her tongue is large, flabby, indented by the teeth, and covered with a whitish coat. The physical examination reveals nothing abnormal. Spleen and liver are of normal size; so is the heart, the sounds of which are also normal; and there is nothing wrong either with lungs or pleura, or with any of the large blood-vessels. Her stomach is filled with gas and some undigested matter; she has sour eructations; but there is no tenderness in the epigastric region. We have, therefore, here a typical case of atonic dyspepsia, which, especially in women, is always connected with disturbed function of the heart and pain in the left side. I think both of the latter are due to the fact that there are often undigested matters left in the stomach; these ferment and give rise to gases, which distend the stomach, and this, by its enlarged size, presses upon the neighboring parts and thus produces the symptoms mentioned. There is a feeling of weight, therefore, in the epigastric region, especially when new food augments the contents of the organ; the functions of the heart and respiration become disturbed as the expanded stomach encroaches upon the cavity of the chest, and embarrasses the movements of the diaphragm, and by the pressure upon the serous covering of the latter the pain is produced which by the patient is referred to the heart. A careful physical examination, the dyspeptic symptoms, and the fact that there is no tenderness in the epigastric region will prevent you from making a mistake. The peculiar appearance of the tongue is, besides, almost pathognomonic. How do you remove this dyspepsia, the pain, and the disordered function of the heart? Advise the patient to eat only three daily meals and to give her stomach perfect rest between-times. Let the meals consist only of several cups of unboiled milk, some slices of toasted white bread, with butter, and either one or two soft-boiled eggs, or a beef-steak, or a mutton- or lamb-chop, the meat to be broiled, not fried in fat. We shall insist on this as the only diet for our patient. Besides, she shall take immediately after each meal a dessertspoonful of liquor pepsin in a wineglassful of water, and one hour before each meal the same dose, in half a tumblerful of water, of the following medicine:

℞ Sod. bicarbonat., ʒss;
Tinct. nucis vomic., fʒij;
Tinct. gentian. comp.,
Tinct. rhei, āā fʒij.

M. S.—Shake well.

Lastly, she shall apply over the region of the heart a belladonna-plaster, and, before a week is over, the pain and nearly all the dyspeptic symptoms—the shortness of breath and the palpitation—will have disappeared.

PLEURISY, DRY STAGE.

Let us now hear the history of James F., 27 years old. He says that he had been well till four days ago, when, walking home in the evening from work, he was caught in the rain, and became thoroughly wet. During the night following he slept restlessly, and towards morning he had a slight chill, followed by fever and a short, dry cough. Now he cannot take a deep breath, as he immediately feels in the left side a severe pain, like a cut with a knife, and he has the same sharp pain whenever he coughs.

His temperature is 101°. He never suffered from pain before, and complains of no other symptom. His tongue is slightly coated; but, as the few symptoms mentioned give us no indication for a diagnosis, I shall make a physical exploration after he has undressed himself so as to have his chest covered by one under-shirt only. You frequently meet with patients wearing two under-shirts, or chest-protectors, like this young man: when examining such a person always see that all superfluous clothing is removed, as it interferes with your hearing. There is nothing wrong with the patient's heart, except that the organ beats somewhat excitedly. Anteriorly, percussion over the lungs elicits all over a clear sound; but on auscultation I find no pure vesicular murmur, the breathing is more bronchial in character, and I hear some sonorous and a few large moist râles, indicating bronchitis beginning its moist stage. Posteriorly, percussion is just as clear, and auscultation gives the same evidences of a mild bronchitis, as anteriorly; but on the left side, over the lower part of the chest, I hear, during expiration, very plainly a friction-sound. Letting the patient cough a few times, I still hear the same râle; if anything, it is stronger than before. A few of the gentlemen may step forward and listen to the sound. This man's stitch in the side is now well explained. He has a mild pleurisy, which is in its first or dry stage. The serous membrane inflames and becomes roughened, and when the two pleuræ meet, which happens at the end of inspiration and at the beginning of expiration, a friction-sound is produced, where formerly, when the smooth surfaces touched each other, no sound was formed. We hear, therefore, the friction-sound during expiration alone; and this it is important to know, as, especially in very small, circumscribed pleurisy, the sound is not very distinct, and is very similar to the crepitant râle which we hear in the first stage of acute croupous pneumonia, but which we perceive during inspiration alone, as this sound is produced by the air entering the air-vesicles and breaking up the sticky secretion beginning in them. Such cases of circumscribed pleurisy, which never go beyond the dry stage, must be very frequent, but are of so little moment to the patient that he mostly has no recourse to medical treatment at all. I judge of their frequency from the fact that it is almost rare to find at a post-mortem no small fibrous threads of adhesion at some place or places between the two pleuræ. From the case before us, and from the others I have brought before you to-day, you will observe that it is not the pain or the stitch in the side, even if respiration is influenced by it, from which you make the diagnosis of the first or dry stage of pleurisy, but that the physical diagnosis alone—the fact that you hear on auscultation, during respiration, a friction-sound—enables you to recognize these attacks of "dry" pleurisy. As the patient is not too well nourished, and is decidedly feverish, we shall advise him to go home and to stay in bed till he is well. He shall have six leeches applied over the seat of the lesion, and take four grains of Dover's powder three times daily, besides the following antiphlogistic and diaphoretic mixture:

℞ Spirit. Mindereri, f℥ij;
Spirit. æther. nitros., f℥ss;
Tinct. verat. virid., ♏xxxvi;
Aquæ florum aurant., f℥ijss;
Syrup. cortic. aurant., q. s. ad f℥vj.

M. S.—A tablespoonful in half a tumblerful of water every two hours.

Attention must also be paid to his diet, which must be nourishing, but easily digested, as milk, soft-boiled eggs, oat-meal gruel, toasted white bread with butter, etc. The food should be given systematically, say every four hours, and his bowels must be kept open.

PLEURITIC EFFUSION.

Our next patient, John P., 39 years old, tells us that until now he has always enjoyed good health, and never in his lifetime—at least, so far as he can remember—has needed a doctor. About seven weeks ago he had to dig out a cellar, and stand a great deal with his feet in water. He contracted a cold, which, he thinks, commenced with a chill, but he is not certain. He says he felt hot and cold alternately, and had a cough, shortness of breathing, and severe pain in his left side. He stayed in bed for about a week, did not call a physician, but sent to an apothecary for something to make him sweat. He felt better after that, and resumed his work; but of late he has suffered more and more from difficulty in breathing, a short cough, and a dull pain in his left side. This pain is constant now, and so is the

dyspnœa. He does not expectorate anything. Besides these symptoms there is loss of appetite and of flesh.

Now, gentlemen, what ails this man? We have the same symptoms—pain in the side and disturbed respiration, besides cough and some fever—as in the last case, and loss of flesh. A decided loss in weight during the period of a few weeks points already to something graver; but, as the man has no other symptoms to guide us, we must again have recourse to physical examination, which will soon reveal the nature of the complaint. Anteriorly, there is clearness on percussion over the apices; the breathing, however, is harsher than normal, more puerile in character. The heart is undoubtedly displaced somewhat towards the right side, and there is uniform dulness on the left side from the fourth rib down. Posteriorly, I find a clear sound on percussion over the right side, but on the left side clearness above the fourth rib, and then a decidedly dull sound all the way down the chest. There is perfect flatness of the percussion-note. Further, on inspection, you will observe that, while the ribs on the right side move with each act of respiration, there is absolute immobility on the left side: the interspaces are effaced and do not sink in during expiration. Applying my hands to the sides of the thorax, posteriorly, and telling the patient to count, "One, two, three," I feel the vocal fremitus very distinctly on the right side, but not at all on the left side.

I shall now auscultate the patient's chest posteriorly. There is exaggerated puerile breathing on the right side, and above the ridge of the scapula on the left. Over the place of dulness I hear absolutely nothing, except over a small space between the fifth and the sixth rib, near the spine, where I hear a faint bronchial sound. The patient's voice is not transmitted to my ear over the dull space. But just above the line of dulness his voice has a bleating sound, which I want a few of the gentlemen present to hear: this sound is called ægophony. We have here absolute dulness on percussion, immobility of a part of the chest-wall, absence of respiratory sound and of vocal fremitus, therefore a pleuritic effusion. Seven weeks ago this man had an attack of pleurisy like James F., who has just left the room; but, in consequence either of neglect or of the different nature of the disease, the inflammation of the pleura did not end with the dry stage, but effusion took place into the left pleural cavity, which latter is now filled with serum up to the fourth rib, pressing the lower part of the left lung against the spine. If the patient had now chills, higher fever, sweats, and a cachectic appearance, then my diagnosis would be *empyema*,—not an effusion of serum, but of pus. If the same dulness existed, but over the dull space should be heard bronchial tubular breathing, and bronchophony, *i.e.*, unnaturally distinct transmission of the voice to the ear, and *increased* vocal fremitus be felt, then the patient would have consolidation of the lung, or *chronic pneumonia*. We had such a patient a week ago in our clinic, and he promised to come here to-day, but he has not made his appearance, or else I should have been able to show you another variety of pain in the side and embarrassed respiration, and the differential diagnosis between pleuritic effusion and hepatization of the lung in pneumonia; but you will have to be satisfied with my verbal explanation and the case present. Remember, therefore, that in pleuritic effusion as well as in consolidation of the lung (which takes place, however, mostly at the *right* lower lobe) we have dulness on percussion, as in both the lung contains no air, being compressed and pushed towards the spine in effusion, and its air-vesicles being filled with products of inflammation in pneumonia. But in pleuritic effusion there is absence of respiration and of vocal fremitus over the place of dulness, while in hepatization of the lung, where the bronchial tubes are not compressed and the solid lung acts as a good conductor of sound, tubular breathing, bronchophony, and increased vocal fremitus are found. And while if to the physical signs of a pleuritic effusion chills, sweats, and all the symptoms of hectic fever are added, these denote change of the serous effusion into effusion of lymph, —empyema,—nearly the same hectic symptoms, if added to the physical signs of consolidation of the lung, mean destruction of the tissue of the latter, breaking down of the lung, and often caseous degeneration, or development of tubercles, which latter frequently happens in chronic pleurisy also. But what must we do to relieve our patient of the pleuritic effusion? We will give him a drachm of the acetate of potash in a tumblerful of water three times daily, to act on the kidneys; let him

take of the following prescription a teaspoonful three times a day in half a glassful of water:

℞ Potassii iodidi, gr. cccxx;
Tinct. cinchon. comp.,
Tinct. cardam. comp.,
Aquæ destillatæ,
Syrup. sarsapar. comp., āā fℨij.
M. S.—Shake well,

gradually increasing the dose to a tablespoonful; feed him regularly and systematically with a good nourishing diet; keep his bowels open by salines if constipated; and apply locally a fly blister as follows:

℞ Emplastr. cantharidis, 7″–8″;
Consperge cum
Morph. acetat., gr. iss.
M. Ft. emplastrum.

This should be kept on the skin over the dull space for eight hours, when it is to be carefully removed and a warm poultice substituted for it. The cataplasm is left on for about one hour, when any blisters which want to form will have done so. After each of the latter has been opened at its most depending point, the wound is dressed twice daily with benzoated zinc ointment spread on a piece of linen. If under this treatment the effusion becomes daily less, we need not do anything further, but if there is no marked improvement within two weeks we shall use the aspirator, draw off the serum, wash the cavity out with carbolized water, and inject diluted tincture of iodine.

Gentlemen, the cases brought before you to-day had all, as their main symptoms, pain in the left side of the chest and embarrassed respiration. To make a diagnosis in each case, either some more symptoms had to be elicited from the patient, or the history had to throw light on the case; but in some the physical diagnosis alone told us the nature of the malady, and in all a physical exploration was imperatively demanded to enable us to exclude organic affection, if such did not exist. Certainly there are many more diseases, as those of the heart, spleen, stomach, etc., where pain in the same locality may for the patient be the main symptom; but those shown you to-day will answer my purpose, which was to impress upon you the necessity of doing more than listening to the patient's symptoms as he tells them, and the importance of inquiring carefully into everything connected with the case, its history, etc., and, above all, never to forget to examine all the organs, no matter of how little moment the case may seem to be. In conclusion, I will add that the urine of every patient brought before you to-day had been carefully examined and the result been a negative one.

ORIGINAL COMMUNICATIONS.

TWO NEW KYMOGRAPHIONS AND A TIME-RECORDER.

BY EDWARD T. REICHERT, M.D.,

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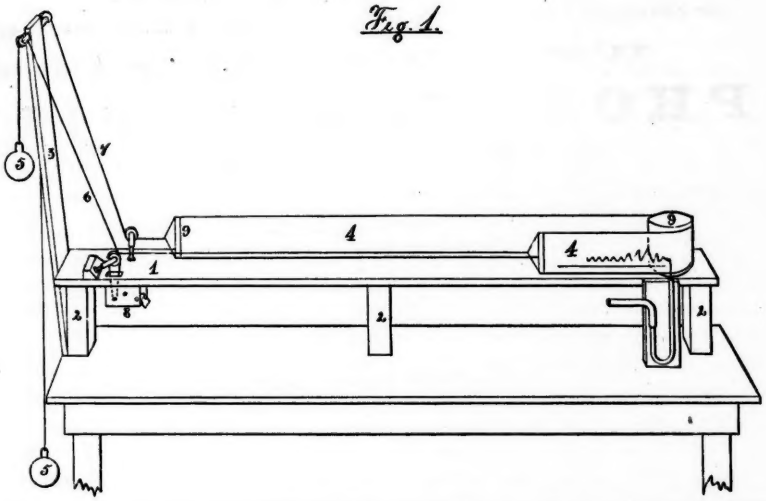
THE frequently-expressed wants of my students, as well as a long-felt and urgent need personally experienced, for an apparatus for graphically recording the effects of drugs on the circulatory and respiratory systems which should combine both cheapness and efficiency, have induced me to devise the following instruments. Apparatus of this nature is so expensive that there are few, if indeed any, of our medical colleges that are so fortunate as to possess duplicate instruments; and as a consequence, where there are several investigators interested in studying similar subjects in the same laboratory, the embarrassment of having but a single instrument has been, no doubt, as forcibly experienced in the discomfort of other teachers as by myself. There have also been times when I have been particularly desirous of investigating some point when for some reason recourse to the laboratory was not practicable; then I have felt the necessity for an instrument in my office. These reasons, and others less important, led me to endeavor to overcome these deficiencies, and with the result of the attainment of very gratifying success.

In planning the kymographions I have not been unmindful of the advantages—with which every physiologist is familiar—in using the continuous roll of paper. But these advantages are almost universally acknowledged to be probably even more than counterbalanced by the intolerable annoyance attending the necessary use of the pen and ink as a marker. This objection, in fact, has been so decidedly felt that experimenters at the present time have almost universally abandoned the use of the continuous roll and ink to substitute smoked paper. This paper being so extremely

Fig. 1.



perishable, the use of rolls is of course out of the question, and the ordinary method of using it is simply to cover the drum, allowing the ends of the paper to overlap, then pasting, and lastly smoking it. By this means a tracing about twenty inches in length can be obtained. In Schiff's laboratory, in Geneva, much longer tracings are made by the use of strips of paper which are retained in position by the necessary supports. The facility, however, with which the drum in modern kymographions can be raised or lowered sometimes enables the experimenter to make two or more tracings on the same piece of paper, with but a momentary interruption occurring between them; but as this cannot often be accomplished with advantage, and as when the paper has once served its purpose it must be removed in order to replace it, the time required in pasting on a fresh paper and smoking it not only causes considerable delay and a disadvantageous interruption in the course of the experiment, but oftentimes seriously interferes with a perfectly successful, and almost always with an accurate, result. While I have discarded the use of the continuous roll on account of the objections to the use of ink, I have endeavored to overcome the troubles experienced in the use of the smoked paper by using strips of an adequate length to fulfil the general requirements of the experimenter, and by reducing to a minimum the time required to replace the marked paper, and these latter requirements I have successfully met by using mechanical devices for retaining the paper in position, thus ignoring the paste-pot, and by taking advantage of these devices in keeping a stock of smoked paper continually on hand.

The kymographion represented in Fig. 1 is the instrument I first devised, and its construction is so very simple that any one having the least mechanical ingenuity can make a duplicate with ease. The framework of the apparatus simply consists of a body-board (1), which is about seven feet long by eight inches wide, and which is supported by three legs (2). At one end of the board is fastened an upright (3), which is inclined outwards, and which is about four feet long. Near the top of this, and fastened to the edges, are two pulleys, from which two weights depend. At the opposite end of the body-board is placed a wooden cylinder (9). The glazed paper is cut in strips six inches wide and seven feet long, each end of the strip is fastened by clamps (5), these clamps in their turn

being fastened to the ends of two cords (6 and 7), which are connected with the weights, the cords being arranged about the several pulleys and clock-work (8) as is represented in the figure.

The clamps for attaching to the ends of the strip of paper are each made of two strips of wood seven-eighths of an inch wide, three-eighths of an inch thick, and six inches and an eighth long. The lower ends are connected with each other by a hinge, the upper ends by a ∩-shaped piece of stiff, heavy wire, and the inside of each piece, where it comes in contact with the paper, is lined with a piece of sheet rubber. The hinge on the bottom of the clamps and the movable ∩-shaped piece at the top allow of the opening of the clamps with perfect facility, while the rubber lining effectually prevents the slipping of the paper when the clamps are closed. In fact, the clamps hold so tightly that the paper will tear before it can be pulled from its grasp.

One of the cords, it will be noticed, is run around the barrel of one of the wheels of the clock-work (8), as represented by the dotted lines. The clock-work simply consists of the three wheels, as in the second apparatus to be described, and is only for the purpose, as in it, of maintaining a regularity in the movement of the paper. The motor power is supplied by the nearest weight, which is heavier than the other, the latter, it will be observed, merely serving as a counterbalance and keeping the paper tightly fixed against the cylinder (9) as it is being pulled around by the heavier weight.

In order to place the paper in position, lay it on the top of the body-board, which is made wide especially for this purpose, then attach the clamp at the end of the cord to which the light weight or counterbalance is attached. When the weight is set free, the clamp to which the cord is attached will be drawn back to the pulley and then be held stationary. The other cord is now drawn around the front of the cylinder backwards and fastened to the other clamp, and after this is accomplished it is a very simple movement to get the paper in position ready for recording. In the figure representing this instrument the time-recorder and the complicated details connected with the manometer are, for simplicity's sake, omitted. There are also some points connected with the motor apparatus which will be given more in detail in the description of the second instrument. I may add, however, that this kymographion performs the work as beautifully and satisfactorily as any of the many kymographions I have used or seen used, and the great advantage it possesses over all others lies in its extreme simplicity and cheapness and the facilities it offers for making tracings of any reasonable length, —from a few inches to ten feet or more. The objection, however, to this apparatus is that, on account of its length, it is inconvenient in crowded quarters; and as a consequence of this I devised the second kymographion, in which this objection is effectually overcome without in the least diminishing its efficiency.

Fig. 2 represents the improved kymographion with all its essential appurtenances, and when complete, excepting a few minor details, as represented in the drawing, occupies a space about three feet square. The essential parts of the apparatus are the drum, the framework, the motor apparatus, the manometer, and the time-recorder, which will for the sake of convenience be referred to *seriatim*.

The *drum* (1) consists of two disks of wood, each being three-fourths of an inch thick and twenty-five inches in diameter, which form the top and bottom, the circumference being formed by a strip of sheet-metal or stiff binders' board six inches wide. In the axis of the drum is a quarter-inch hole, which is penetrated by a pin (2) of a slightly less diameter, and which is fastened in the framework (3), and around which the drum is permitted to revolve. On the under surface of the drum is affixed a third disk, one inch less in diameter, and which has a groove cut in its circumference, in which a cord is placed, which serves to revolve the drum. By placing a small iron washer beneath this grooved disk at the base of the pin, as shown by the dotted lines (3), friction caused by the movements of the drum on the framework is effectually overcome.

The paper is fastened to the drum by two clamps (4), one of which is represented in the drawing as being open and in a position to receive the end of the paper. These clamps are simply pieces of wood, as previously described in connection with the first kymographion, the side of the drum, however, being made to serve in

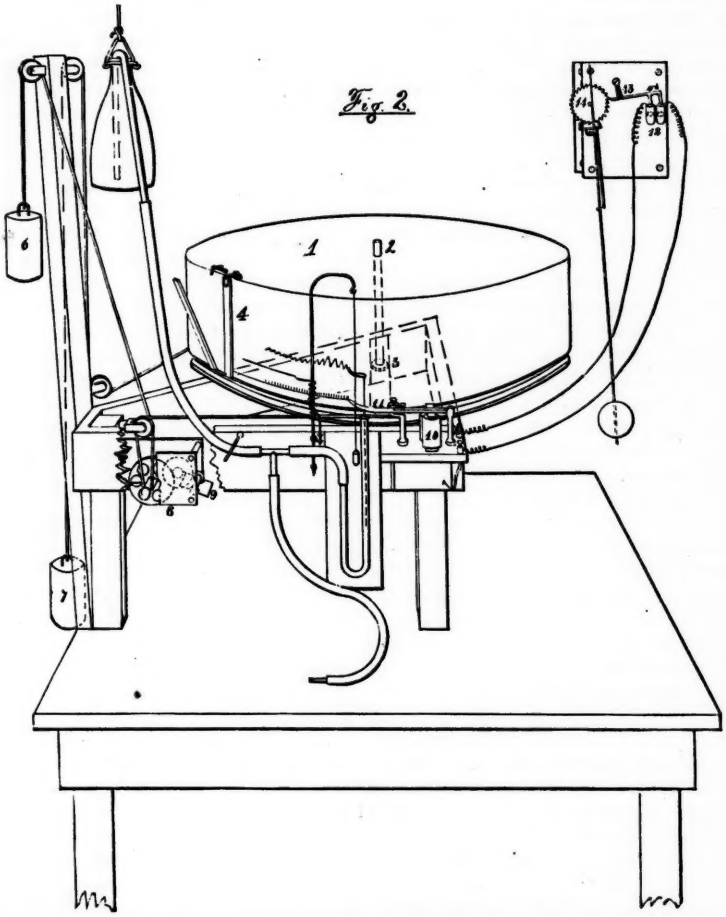


Fig. 2.

place of one of the pieces in each clamp. The lower ends of the clamps are fastened to the under surface of the drum by means of hinges, which allow of freedom of movement, as represented in one of the pieces which is open; and when closed the upper ends are held firmly in contact with the side of the drum by a simple mechanism, which is so distinctly shown in the drawing as to require no descriptive details. This arrangement of the clamps allows the paper to be removed and replaced with the utmost facility, and, moreover, by changing their relative positions, tracings may be made of any desired size from a few inches to the full length.

The *framework* is trapezoidal in shape, made of strips of wood three-fourths of an inch thick and three inches wide, and is supported by three legs, the one beneath the drum not being shown. An extra strip running from before backwards, and in which the pin (2) is placed, is represented by the dotted lines.

At the left end of the framework is placed an inclined upright (5), which, as in the previously-described apparatus, supports the weights (6 and 7) that are connected with the motor apparatus.

The *motor apparatus* is very simple, and consists of two weights (6 and 7), each of which is connected with the end of a cord

which, if we commence at the end at weight 6, passes over the pulley at the top of the upright, thence downwards to the second pulley at the base of the upright, thence around the groove in the circumference of the disk which is fastened to the bottom of the drum, thence to the front pulley at the base of the upright, thence downwards, making a half-turn around the barrel of the axle of the winding-wheel of the clock-work (8), thence upwards to the pulley at the top of the upright, and finally to weight 7.

These weights, although represented in the figure as being of the same size, are, in truth, widely different in this respect, the one (7) which is the motor power weighing about four pounds, and the other (6) weighing only about nineteen ounces and merely serving as a counterbalance. It is obvious now that, if these weights were free to move, the force of gravity would bring the heavier weight to the floor with a rapid movement and of course a correspondingly quick revolution of the drum: so, in order to obviate this, as well as to introduce a regulating mechanism by which the revolutions of the drum should be made regular and steadied, a portion of the works of an old brass clock was connected with the cord, as already explained.

This clock-work is simply an old set of works from which all the wheels have been removed except the three represented in the figure (8), which will be recognized by any one familiar with the construction of clocks as being connected with the striking apparatus. Around the barrel (the cylinder around which the cord is wound) of the wheel which is directly in contact with the cord is placed a piece of rubber tubing, which is fastened tightly by means of a proper cement. The object of this rubber is to afford friction, whereby the cord is prevented from slipping, as it would obviously do were it brought in immediate contact with the smooth metallic surface. This clock-work, let it be understood, is not the motor power; its only purpose is to regulate the steadiness of the revolution of the drum and to some extent the rapidity of its movement.

The speed with which the revolution of the drum is made may be altered in two ways,—either by a change in the relative sizes of the two weights or by diminishing or increasing the size of the alæ of the fly-wheel (9). It is very apparent, *cæteris paribus*, that the greater the surface of these alæ which is brought in contact with the air,—or, in other words, the greater the amount of friction produced,—the more slowly will the drum revolve; and in regard to the weights, the greater the difference between the sizes of the weights, the greater will be the velocity of the drum, or *vice versâ*, as the case may be.

The movements of the drum can be held under complete control by fastening a lever on the under surface of the frame, in such a position that when it is closed (pushed to the extreme right) the end comes in contact with the fly-wheel (8), and when it is open allows of a free movement. This allows of the movements of the drum being started or stopped at pleasure.

After the drum has made a complete revolution and the paper removed, it can be returned to its starting-point in almost a moment by pulling consentaneously on the two cords 9 and 10. The peculiar mechanism in the winding apparatus of clocks, by which the barrel of the wheel around which the cord is wrapped or the spring attached revolves, is so well known as to require no detailed explanation, and it is sufficient only to say that the barrel, being free to move in the reverse direction without affecting any movements in the wheels, allows of this very rapid readjustment of the position of the drum.

The *manometer* and its appurtenances are essentially the same as in common use in all physiological laboratories. One slight modification to which I may incidentally allude is the marker for the abscissa-line. This is made by wrapping a piece of thin, stiff brass wire a number of times around the ⌈-shaped wire (which suspends the string and weight for keeping the float-marker against the drum), so as to make a spring, one end of which is brought in contact with the paper and the other is allowed to press against the side of the framework. By having the marker thus arranged, the one end is kept constantly against the paper, while the utmost freedom of movement is gained for raising or lowering it, as the case may be.

The *time-recorder* is composed of two essential parts,—the *marker* and the *current-breaker*. The marker consists of a piece of sheet brass (11), which is wide at the point of soldering and gradually tapers towards the free extremity, and which is

soldered to the arm of an ordinary telegraph "sounder" (10). This piece describes a curve in front of the float-marker, to reach the paper with which it is brought in contact. This curve gives the marker sufficient elasticity to keep it firmly in contact with the paper, and yet allows of sufficient movement to overcome effectually any unevenness on the surface of the paper, while the width of the strip gives it sufficient body so as to make a clear up-and-down stroke without the existence of any undue vibrations being set up in the end in contact with the paper. The advantage in using a piece of sheet brass in the place of wire, as is frequently used, is that unless the wire is heavy the amount of friction at places of considerable unevenness in the paper is so great as to arrest the movement of the marker; and if the wire is thin, similar difficulties are experienced. These obstacles are effectually overcome by the use of the sheet metal as described; and in proof of the accuracy of this assertion I would state that the marker just described will work perfectly over a projection nearly a quarter of an inch high.

The mechanism of the recording of the time, as already may be inferred, simply consists of the vertical strokes made by the marker, each of which represents a given space of time. These strokes are made by the making and breaking of an electric circuit. When the current is on, the marker rests at its lowest point, as is indicated in the tracing by a straight line. Just as soon as the current is broken, the attraction of the magnets for the arm of the sounder is destroyed, and as a consequence the spring which is attached to it throws it upwards; and if the breakage of the current is only momentary, a single vertical stroke is made, as is represented in the drawing.

The application of the mechanism for the momentary breakage of the current is the principal new feature I have added in this connection. An examination of the relatively enlarged diagram of the clock in the upper right-hand corner will show that it consists of three essential parts,—the clock-work, two cups of mercury, and a lever. The clock-work consists of the wooden works of an old-fashioned clock from which all the wheels have been removed but four,—the one seen in the diagram, one directly connected with the weight, and two intermediate. On the extreme right-hand side of the face of the clock-work are fastened two glass cups partly filled with mercury, each of which is connected with the "sounder" by a wire (the battery, which consists of a single Callaud or gravity cell, is purposely omitted in the drawing). There being no connection between the mercury in the two cups, the circuit of course is broken; and in order to make this connection a piece of sheet brass was taken and cut in the form as is shown in the figure (13), which, as will be seen, is essentially a lever that is suspended by a vertical arm which is attached to a screw and forms the fulcrum. One extremity of the lever is brought in contact with the teeth of the wheel (14), and the other, or ∩-shaped extremity, is free to move. It is now clear that if the ∩-shaped end of the lever were permitted to fall, a communication would be established between the mercury in the two cups, the current passing from one cup to the other as indicated by the arrow, and as a consequence the circuit would be closed. The end of the lever is here shown, for clearness' sake, raised to an exaggerated degree: practically it is never raised more than sufficient to break the current momentarily, or, in other words, merely to sever the contact with the mercury.

The mechanism of the raising and the falling of the lever will be obvious at a glance. The short extremity of the lever, which is in this instance the "power" end, is made to project between the teeth of the wheel (14); and, as a consequence, as each tooth is forced past it in its revolution, the end of the lever is forced downwards and the ∩-shaped end of the lever simultaneously thrown upwards, but, of course, to a far greater extent, owing to the position of the fulcrum. Now, in order to obtain a momentary breakage of the current, the "power" end of the lever must be so arranged that when the pendulum is at the extreme right the tooth of the wheel is almost in contact with the end of the lever. If it is thus fixed, the next movement of the pendulum to the left will allow of the sudden escapement of a tooth of the wheel, and a resultant sudden depression and escapement of the "power" end of the lever, with a simultaneous sudden rise and fall of the distal end, thus making a momentary breakage of the circuit.

The time recorded can be modified by

moving the pendulum weight or by affixing to the toothed wheel others in which a variable number of teeth are omitted or added, so that the time may be recorded varying from fractions of a second to a minute or more, as desired.

I have sometimes experienced considerable trouble in properly adjusting the end of the lever to the teeth of the wheel; but if the above directions are carried out, with the exercise of a little patience, it can readily be accomplished, and when once arranged the apparatus will do the work as well as any instrument manufactured. I may add that an advantage is gained by twisting the end of the lever corresponding with the wheel so that its broad surface comes in contact with the teeth.

In regard to the cost of the apparatus, I will state that either kymographion with all its appurtenances, including the time-recorder, can be made for from five to seven dollars, the most expensive parts being the "sounder," which can be bought in New York* for two dollars and seventy-five cents, and the gravity cell, which will cost one dollar. Old clock-works can be bought for their weight as old brass. The carpenter-work amounts to a nominal sum, —a dollar or two, according to the instrument. Other portions of the apparatus can be readily arranged without the aid of skilled mechanics.

CAN POTT'S DISEASE OF THE SPINE OCCURRING IN CHILDHOOD BE CURED WITHOUT SUBSEQUENT DEFORMITY?

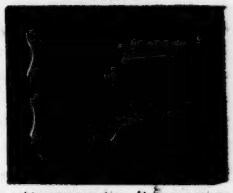
Read before the Philadelphia County Medical Society

BY OSCAR H. ALLIS, M.D.,
Surgeon to the Presbyterian Hospital.

ONE of the functions of the spinal column is support. Composed as it is of twenty-four separate vertebræ, the careful observer will see from first to last how each successive one is adapted to the gradually increasing burden. In the dorsal region the demand for greater strength calls for sudden and important changes in the supporting column, for upon this part the weight of the arms and all they can grasp is suddenly thrown. But this is not all. Strange as it at first glance would appear, the column in the very part where the burden would seem most to fall, and the greatest strength needed, gradually arches backwards, departing from the primal law of nature that we see in the straight trunk of the oak, and, in departing from it, sacrificing *strength* in one part to the architectural completeness of the whole. That the column itself is *weakened* by this departure from the direct course nature is ready to admit; for with the beginning of the dorsal region changes most emphatic and abrupt take place. The spinous and transverse processes, which in the cervical region were but rudimentary, now take on completeness; while in the bodies, the ribs, and the sternum, we see the loss more than adjusted; and it will be interesting, if not instructive, to pause a moment and examine step by step how beautifully and how successfully this seeming defect has been overcome.

And, first, let us note the changes that take place in the bodies of the vertebræ. In the cervical region the bony substance is distributed laterally, so that the shortest diameter and the least bony support is from before backwards. This is through design. In the neck the freest and most important motions are from before backwards, and in this region the multitude of large strong muscles compensate in no slight degree for the small and inadequate bony support. But when we examine the dorsal region, we find the greatest amount of bone-substance from before backwards; and, as if to increase still further the antero-posterior diameter, long strong spines —the longest in the entire column—are to be found: so that if we measure from the front of the body of a vertebra to the tip of its spines, we will find the middle dorsal to be nearly three times as deep as the middle cervical. In the diagram I have represented the spines as directed horizontally backwards; but such a course would be a loss in convenience as well as in strength. Man must lie on his back, and this would be impossible with horizontal spines: a glance at the figure, however, will demonstrate that spines thus directed would be more than an inch apart at their tips, while

FIG. 1.



Diagrammatic. Representing the antero-posterior diameter of dorsal vertebræ.

* Otto Rauda, 194 Fulton Street.

in the normal spines we see them lying in close proximity,—a plan that admits of short strong ligaments and a compact structure. Thus we see that the first step in overcoming the weakness entailed by a curved spine is provided for by greatly increasing its antero-posterior diameter.

FIG. 2.

Diagrammatic. Showing by contrast the compactness of the spine when compared with Fig. 1, the possibility of shorter and hence stronger spinous ligaments, and how the same length of spine, by being turned downwards, will not interfere with dorsal decubitus.

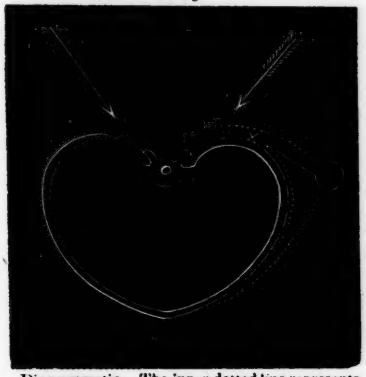
We have now to see how the column is supported laterally. This is accomplished chiefly by the ribs. As these are designed to support the vertebral column, protect the thoracic viscera, and give attachment to powerful muscles, their connections with the transverse processes and the column must be close and intimate, as if all were united by bone; and yet this cannot be, since the great function of respiration depends upon the movement of the ribs. To have a structure movably immovable is a paradox exemplified in this part of the economy.

It will be noticed that the rib abuts against *two* vertebræ. In a little excavation, made at the expense of two adjacent vertebræ, the head of the rib finds a secure lodgment; and to add to its security a little ridge that divides the head of the rib into two facets serves as an attachment for a short strong ligament that connects it with, and makes it an *integral* part of, the intervertebral substance. About an inch from the head of the rib, and upon its under border, is a little spur. This is designed to fit into a little excavation in the upper front part and tip of the transverse process, while, to complete the union, ligaments in every advantageous direction are found. No such extraordinary care to bind two structures together could be without a purpose. The ribs thus become practically immovable; a slight pivotal movement is all that is left, and this is only possible through slight rotation upon the interarticular ligament,—*a motion without separation*. Dislocation here is impossible. Fracture of the transverse process may exceptionally take place; fracture of the arch of the rib is not impossible; but dislocation of the head of the rib is impossible. So intimate a relation between the vertebræ and ribs—possibly even stronger than actual bony continuity—is necessary for the work to be performed. By a semicircle whose centre is but little in front of the body of the vertebra, and by the arc of a circle of greater radius, the rib completes its course. The junction of these two curves of the rib is a weak point, the most frequent and safest point for it to fracture. Section of the rib near its vertebral and sternal ends will show the compact tissue—*i.e.*, the relative weight and strength—largely in excess in the former position, while the actual size is increased at the sternal end. The sternal end is light as possible, since its chief support is from the vertebræ; but its size is increased and shape changed, so that the amount of bony matter left can be most advantageously disposed to meet the great demand upon it. One of these demands is to hold the body in an erect position. Between the *expanded* chest and the expanded pelvis muscles take their course, and so powerful is their action at times that five cases are recorded of transverse fracture of the sternum by their action alone; while the more frequent rupture of the rectus abdominis shows that the sternum, supported mainly upon the tips of the ribs, is more than a match for them. To form a just idea of the chest, it should be regarded as a series of bony hoops, placed one below the other, gradually increasing in size, and all firmly united at opposite points in the sternum and vertebræ. Upon such a structure the shoulder is to rest. How it rests, and how its greatest burdens are made to contribute to the strength of the vertebral column, is truly a matter of wonder. The shoulder rests upon the chest only at two points,—viz., at the upper part of the sternum and at the point of greatest convexity of the ribs. At the latter point the posterior border of the scapula is held by the action of the rhombo-serratus* muscle, a muscle that passes from the spines of the vertebræ to the front part of the ribs, binding, when in action, the posterior border of the scapula to the arch of the ribs *at the point* where support is so greatly needed, while the pectoralis major, trapezius, and latissimus dorsi, whose actions are so happily displayed in the great

* Anatomists will please pardon this attempt at word-building.

power of the arms, can never act without still further bringing the posterior border of the scapula to the support of the chest. If now we look at the posterior part of the ribs supported as just described, we will see how admirably they are designed for lateral supports to the vertebral column.

FIG. 3.



Diagrammatic. The inner dotted line represents the rhombo-serratus muscle; the star in the dotted line, the point where the scapula touches by its posterior border the greatest convexity of the ribs. The outer dotted line represents the trunk-muscles that attach to the humerus (O), which by their action press the scapula at the star (X) the more firmly upon the ribs. The arrows show the direction of the postero-lateral support to the vertebral column from this arrangement.

What I have already said finds its relevancy to my subject only in contributing to the proposition that to the chest, as a whole composed of separate but mutually dependent structures, and not to the vertebral column, is due its great strength; and it will be my further purpose to show that disease and loss of substance in one of its most important factors cannot take place without serious and important changes in the structure as a whole.

A century ago, Percival Pott, Surgeon to St. Bartholomew's Hospital, published an article on "the palsy of the lower limbs," in which he so minutely described the disease under consideration that it has ever since borne his name; and candid competent writers of the present day acknowledge that little has been added by modern surgeons. He taught—

(1) That the disease is not due to traumatism. That however direct violence, overwork, strain, etc., may at times be regarded as the exciting cause, yet in the majority of cases no adequate cause can be found for so grave a disorder.

(2) That the disease is not of the ordinary inflammatory type, but is tuberculous in its nature.

(3) That the only cure of the disease is through anchylosis. That by the melting away through caries of the bodies of the affected vertebræ a cure is effected only through anchylosis of the sound vertebræ adjoining the diseased section.

(4) That a cure consists in restoring the patient to health and usefulness, and not in restoring symmetry. That deformity of variable extent is inevitable.

The precise language employed under these four heads will not be found in the original article of Mr. Pott. I could not quote from him without occupying more space than I am allowed. They are, however, his in point of fact; and to their elaboration and defence I now ask your attention.

Whether (point 1) the disease is or is not due to traumatism is a question under dispute. That the origin is frequently so insidious as to escape the watchful care of the mother is, however, a clinical fact; for often the child is only brought to the physician after the prominent spine is present, a condition which shows the sad havoc already wrought.

Points second and third are affirmed by modern pathologists. Billroth says there are no instances to be found in which the substance lost through caries of the bodies of the vertebræ is replaced; while every author that I have examined states that the cure is, as a rule, through anchylosis, though in exceptional cases the ossification of the reparative tissue is incomplete.

The fourth point—and the one to which all that I have said, either directly or indirectly, tends—is the cure. Is deformity inevitable?

Let us examine a case in which the disease has been confined to a single vertebra; its body and the adjacent vertebral cartilages have melted away; the upper sound vertebra has descended to rest upon the first lower sound one, the spinous process has become prominent in the dorsal aspect, and the whole finally consolidated by ossific transformations.

A glance at the successive steps through which the disease as just described passes exhibits in a most wonderful manner a watchful supervision in the human economy, even in a disease whose havoc presents scarcely a parallel. The disease begins in

the median line, in the bodies or intervertebral substances, and in most instances leaves the apophyses unaffected. The bodies melting away throw the superincumbent weight upon the articulating processes and the spinous ligaments. By slow degrees the ligaments between the laminæ and the spines yield to the superincumbent weight, while upon the articulating processes and the ribs—*as upon an axle*—the superincumbent weight slowly and safely sinks to a bed of support. This inclination forward of the parts above the diseased point is always in the direct line, and not by twist or rotation of the column. The vertebral canal in this bending forward is lengthened *only* in its *posterior* aspect, and in this shows a wise provision; for the attachments of the membranes of the cord are only to the anterior portion of the canal; and this portion of the canal is not so affected as to put the membranes or cord on the stretch or affect the exit of the spinal nerves.

Thus the disease, even when taking a natural course, seems to be guided through many dangers to a safe termination; and it is not strange that Bryant, in a recent edition of his "Surgery," should say, "It is an interesting clinical fact that the *best cases of recovery* from the *worst* examples of spinal curvature and disease are to be found amongst that miserable class of patients who have never had any chance of receiving proper treatment, who have never had rest or any care, in whom the disease has run its course unattended and uncared for, and yet in whom a cure has taken place with firm anchylosis, although with deformity."

Nature cures, whenever a cure takes place, with anchylosis and deformity. Can art or science step in and prevent this deformity?

Let the instance of a single diseased vertebra be retained. If we measure the body of a vertebra at the points of disease, we will find that the long antero-posterior diameter is about equal to the vertical diameter when the adjoining intervertebral substances are added. When the body and cartilages melt away and the healthy adjoining vertebræ come together, their changed axes will meet at an angle of 45°;* and this fact (the fact that the disease has been confined to a single vertebra) may be noted by the prominence of the spinous process in the affected region. Here it will be seen that the prominent spine belongs to the first sound vertebra *above* the one diseased, and that the spine of the affected vertebra has not changed its relations to the sound underlying one. If this statement calls for support, it may be seen by contrast in cases where the disease has been manifested in the entire series of dorsal vertebræ, and where there is not a single prominent spine in the whole region. If still further illustration is necessary, it may be supplied by this,—that the *change in the position of the spine* is produced by *a change in the position of the body* of the vertebra. When, then, the body melts away, there is nothing left to influence its spinous process, which remains attached and closely bound to the first sound underlying one.

FIG. 4.

Diagrammatic. Showing how the spinous process of the upper sound vertebra becomes prominent by the forward inclination of the parts above the disease.

In a growing child the spinal column increases in length like the long bones. Each segment has two epiphyseal laminæ. In the destruction of a single vertebra and its adjoining intervertebral cartilages we have not only the epiphyseal laminæ of the bone destroyed, but by the loss of the cartilages we lose the laminæ of the sound vertebra adjacent to the cartilages: so that while the disease proper is confined to a single vertebra and two cartilages the arrest in growth has extended to four ossific centres. But this is not all: two sets of ribs have shared in the morbid process. Their immediate attachment to the intervertebral substance has made their escape from disease impossible, and the bony cure has included them in a single solid unyielding mass.

From the moment of the onset of the disease, to the time when the patient shall have attained his fullest development, two processes must be at work,—one of steady expansion and growth, the other of fixation, hindrance, and opposition. The arms and legs and unaffected structures push onward to seemingly undue proportions, while the consolidated vertebræ and ribs distort with firm and tireless grasp all contiguous parts.

* Under the circumstances above described, 45° would be the maximum change in the axes of the affected vertebræ. In many instances it would, no doubt, be less.

The affected vertebræ, fixed at an angle of 45°, control the development of the trunk, and lift the scapulæ and shoulders, while the affected ribs, unable to expand from loss of their vertebral epiphyses, narrow the chest and distort the sternum. Is there any escape in art or science from this? *I answer, not unless we can effect a cure without anchylosis; not unless we can supply lost structure; not unless we can impart to scar-tissue all the activity that healthy structure has.* The cure of spinal disease does not depart from the law of cures in other parts of the economy, that follow loss of substance. Disease of the hip in childhood is followed by arrest of growth in the femur and asymmetry of the pelvis. A one-sided pleurisy with adhesions occurring in childhood will present a striking distortion in after-years. In the loss of an eye in childhood, not alone the orbit, but the whole side of the face lags in the progress of development. But probably the most striking analogy is in the sad havoc from a burn that involves the neck, chin, and lips of a child; I mean a burn that destroys the skin, and one in which the resulting cure binds the underlying muscles and superficial bones in one unyielding mass. If one will see such a *cure* in childhood, it will present none of the distortions of later life; and the reason is not so much that the scar contracts, but that the cervical vertebræ in the back part of the neck so rapidly outstrip the scar-tissue in the front part that the latter *compels* the former to arch forward.

The deformity is consequent upon the unequal development, and no art can prevent it. The arrest of disease is at best a compromise. In the disease under consideration, the child, from a sickly, half-palsied object of commiseration, can be made sound, happy, and useful; and it is folly to ask more. For a century every device that human ingenuity could suggest has been brought to bear upon the unfortunate of this class; but to-day the deformed victims of this disorder are as numerous in the great medical centres of our land as at any previous period of the world's history.

What I have said was written far better a century ago; and I shall close with the following observations:

That one who has conducted a case to a successful issue—who has restored the patient to health and activity—has done all that medical skill can do.

That he need not reproach himself with any subsequent deformity; nor has the profession any right to make such a charge.

That the candid surgeon will acquaint the friends of the patient with the inevitable result, and not make promises that will in the end prove delusive.

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THE INFLUENCES THAT PREDISPOSE TO PULMONARY CONSUMPTION.

Read before the Philadelphia County Medical Society, November 9, 1881,

BY JAMES C. WILSON, M.D.

IN the course of the discussion of an interesting paper upon the "Pre-Physical Sign Stage of Phthisis," read by Dr. Eskridge at the last meeting of this Society, the question, What constitutes a predisposition to pulmonary phthisis? arose. This question remained unanswered, and it was, indeed, but indirectly connected with the subject at that time occupying our attention. It nevertheless appeared to me to be a practical and suggestive query, and therefore not lightly to be passed over. The recognition of the peculiar liability to special forms of disease which constitutes a predisposition, in individuals, families, or communities, falls properly within the scope of preventive medicine, and is therefore, from a practical point of view, even more important than the recognition of such diseases themselves when established, just as prevention is proverbially better than cure. In the case of a disease so common, so intractable, and so progressively fatal as pulmonary consumption, the question of individual and family predisposition assumes the gravest importance. Upon its answer frequently depend interests of the greatest magnitude,—the choice of a career, of place of residence, marriage, a life of usefulness and comparative health on the one hand, or, upon the other, blighted prospects, illness without reasonable hope of cure, and an early grave.

My object in reading this paper is to discuss briefly and in a manner rather suggestive than exhaustive the influences which predispose to pulmonary consumption. It is only fair for me to state at this point that I have no new facts to communicate, hoping rather to call forth, from the unrecorded experience of those present, facts that have escaped the observation of the majority.

We encounter on the threshold of our inquiry two questions, which must be answered before we go on with the discussion.

First, what is meant in general by *predisposition* to disease?

I venture to so modify the definition of Dunglison that it should read thus: "Predisposition, that constitution or condition of the body which renders it peculiarly liable to disease under the application of an exciting cause."

The time-honored method of the text-books, which divides causes into *predisposing* and *exciting*, has been a source of endless confusion and perplexity. Liebermeister, writing of the etiology of the infectious diseases, has suggested that the expression "predisposing influences" be substituted for "predisposing causes," as tending to clearer views of the origin of diseases. Every attack of disease must be due to an exciting cause or causes; predisposing influences may render the individual less or more prone to the action of the exciting cause, but no degree of predisposition can of itself, in the absence of the exciting cause, give rise to disease. It is a matter of common experience that individuals strongly predisposed to pulmonary consumption escape that disease altogether, and ultimately perish of some other affection, or even of old age, whilst, on the other hand, persons in whom the closest scrutiny fails to bring to light any distinct predisposition whatever, contract the disease under the direct action of some one of its well-recognized exciting causes.

The second question is not so readily answered. What is pulmonary consumption?

By common consent, both among medical men and others, this term is universally used to designate chronic wasting diseases in which the principal symptoms during life and the principal lesions found after death are associated with progressive destructive changes in the lungs. But these diseases present clinically an endless variety of cases differing among themselves in the mode of origin of the disease, its progress, duration, and the grouping of the symptoms. So that, whilst we are fully agreed as to the meaning of the term pulmonary consumption in general, when we come a little nearer and attempt to define the disease with accuracy, and especially when we attempt to classify the cases into separate, well-characterized groups, we are met with difficulties that are practically insurmountable. No writer, as far as is known to me, has yet succeeded in framing a succinct description that would include all cases, or in so grouping the varieties of pulmonary consumption that his classification would fulfil the requirements of all the cases met with in every-day practice.

This is, without doubt, due to the fact that the variations in the clinical history of the disease and in the anatomical changes encountered in the lungs depend in part upon variations in the intensity and duration of the inflammatory processes localized in the lungs, and in part upon those constitutional tendencies which determine the character and degree of reaction to the primary irritation and infection, the pathological problem in the advanced stages of the disease being in every case a very complex and difficult one.

Here, however, as elsewhere in pathology, morbid anatomy sheds light upon the subject. This light was for a long time, during the early investigations into the nature of tubercle, very dim, and served to make the darkness in which the subject was enveloped visible, rather than to dispel its shades. It has, however, steadily gained in brightness until the pathology of pulmonary consumption is now comprehensible, and an outline classification of the cases upon the basis of the preponderance of certain anatomical lesions has become possible.

The essential lesions consist in the changes brought about by inflammation, and are, in general terms, of three kinds, corresponding to the tissue involved in the inflammatory process. They are,—

a. Chronic inflammatory processes in epithelial structures—catarrhal pneumonia.

b. Chronic inflammatory processes in lymphatic structures—tubercle.

c. Chronic inflammatory processes in the interlobular connective tissue—interstitial pneumonia.

The lesions due to these three processes are to be found in most, if not in all, cases. They are present in varying proportions, now one, now another predominating, most frequently no single lesion being conspicuously in excess of the others. When, however, any one of the three processes has throughout the case constituted the principal morbid factor, the clinical

aspect of the disease is usually so modified as to distinguish it from the general picture of pulmonary consumption, and to enable us to refer it to one or another of three separate groups. These are,—

A. Catarrhal phthisis.

B. Tubercular phthisis.

C. Fibroid phthisis.

And they embrace many, but by no means all, of the cases.

Regarding pulmonary consumption in all its forms as an inflammatory affection, I look for its exciting cause, in all cases, in some irritant. This irritant may come from within or from outside the body. It may consist of the non-expelled products of a simple catarrhal inflammation called forth by changes in temperature, or by blood, or mucus, or pus, drawn deeply into different portions of the lungs during the inspirating effort of cough; it may consist of that obscure product of caseation which, borne in the lymph-channels or in the blood itself, is capable of causing those changes in the lymphatic tissues which have been named tubercle, and in this instance it may be derived either from a caseous mass in the individual himself, or exceptionally from a similar disintegrating nodule in the lungs of a close companion, for in this way alone is it possible to explain the well-proven facts of the direct transmissibility of consumption; finally, the irritant which is the exciting cause of the disease very frequently consists of minute particles of solid matter swept into the lungs upon the air-stream for long periods of time, as happens in many trades and occupations. There are without doubt other irritants capable of inducing chronic inflammation of lung-tissues, and thus playing the rôle of exciting causes of consumption, that are as yet involved in great obscurity, or altogether unknown.

The vast majority of individuals are constantly exposed to these exciting causes. According to Hirsch, two-sevenths of all deaths are due to consumption of the lungs. The concurrence of the predisposition and the exciting cause underlies the enormous prevalence of the disease; the absence of the predisposition explains the escape of multitudes. It is to be borne in mind that many who are predisposed to pulmonary consumption die of other affections early in life, or, at all events, prior to the development of the disease.

The problem of preventive medicine is to recognize the predisposition in the individual, in order that he may be as far as possible removed from the action of the exciting causes.

Of race and national predisposition it is hardly necessary to speak. No race or nation enjoys exemption. The hybrid races are conspicuous for their predisposition to consumption. So notable is this fact that mulattoes are debarred from the privileges of life-insurance.

Climate in general terms does not constitute any especial predisposition to consumption. There are localities in all zones the inhabitants of which enjoy a relative immunity, yet there is no belt of the earth in which it is not very prevalent. From this we may infer that neither the continuous warm temperature of the tropics, nor the alternating seasons of the temperate zones, nor the perennial low temperatures of cisarctic regions constitute a predisposing influence, — in short, that temperature, of itself, is inoperative. It is, however, established that those dwelling where the air is dry, even if it be cold, are less generally predisposed to consumption than the inhabitants of moist regions; those dwelling in uniform than those in changeable climates, and those in elevated regions than those living in low levels, the death-rate per thousand from this disease rapidly diminishing as we recede from the coast-line of mountainous countries.

As we approach the consideration of the influence of restricted locality, of occupation, mode of life, diet, and previous diseases, we are brought face to face with the fact that the conditions which in the individual go to form a predisposition to consumption are two:

First, a more or less marked vulnerability of the elementary tissues of the lungs; and,

Second, the tendency of inflammatory processes to run a peculiar course, and to result in products which do not proceed normally either to resolution or to suppuration, but remain stationary, or undergo retrograde changes of a cheesy nature.

These conditions are either hereditary or acquired, and the influences which tend to produce them are the influences which predispose to pulmonary consumption.

First, and of primary importance, is heredity. In view of the fact of the transmission of the same traits of face and form and the same mental qualities in

families through generations, and that such transmissions are the rule rather than the exception, it can excite no wonderment that constitutional tendencies to disease, or even peculiarities of bodily organs or tissues, are handed on from father to son.

The influence of heredity may manifest itself from childhood in a vague delicacy of constitution, or in the form of scrofula, or it may exist as a taint lurking under the semblance of the most perfect health. In many instances the children of consumptive parents present types of health almost ideal, until some depressing influence, physical or moral, lights up the smouldering tendency to a destructive fire.

The hereditary predisposition may be derived from parents not themselves the subjects of the disease. Thus, the offspring of feeble parents, or of near kin, or of old men, or the younger members of large families, where the interval between the bearing of children has been short, often inherit a strong predisposition to consumption.

Closely related to the subject of heredity is that of the influence of the conformation of the chest. Various alterations in the contour of the thorax have come to be recognized as indicative of a tendency to consumption. The varieties of departure from the typical form of the thorax that have been described by writers are the alar or pterygoid, the flat or paralytic, the transversely constricted, the pigeon, and the rickety. These sub-typical forms are in part inherited, in part congenital, and in part acquired early in infancy in consequence of disease, malnutrition, or errors in management. They give rise to diminished capacity of the thorax, and to limited respiratory movements, and are associated with arrest of development and early rigidity of the costal cartilages.

Marked alterations of the chest acquired later in life in consequence of errors in dress, of the cramped postures or vicious pressures of certain handicrafts, or of the enfeeblement of the respiratory muscles due to sedentary habits or prolonged illness, also exert an important influence.

Closely associated with the subject of enfeeblement of the muscles of respiration is that of diminution of the vital capacity of individuals predisposed to consumption. Hutchinson established by extended experimental research the fact that in healthy persons there is a minimum of so-called vital capacity, varying according to the age, sex, height, and body-weight. Persons unable to attain this minimum, though in other respects healthy, are prone to develop chronic destructive diseases of the lungs.

There is yet another condition, more frequently inherited than acquired, the influence of which must not be overlooked. I refer to habitual feebleness of digestion and inability to properly assimilate fatty substances. This condition manifests itself by spareness of body, easily provoked intestinal indigestion, and an habitual dislike for, or inability to partake of, fatty articles of food. So well recognized is this as a predisposing influence that at least one observer (Dr. Dobell) has promulgated and brilliantly defended an hypothesis of the pathogenesis of pulmonary consumption based upon it. This hypothesis is substantially as follows. In consequence of deficient supply or defective quality of the pancreatic juice, and of the secretion of the liver and the intestinal glands, the food-fats are imperfectly digested. The blood does not supply the fat-elements required for oxidation, does not replace those taken up during interstitial nutrition, but, on the contrary, takes up the interstitial fat to compensate the deficient supply from the food. This having reached a certain point, the fat elements of the albuminoid tissues are seized upon, and these tissues are minutely disintegrated in the process. The result of this disintegration of albuminoid tissue is, Dr. Dobell thinks, true tubercle.

The conditions affecting the lung-tissues that predispose to pulmonary consumption are frequently acquired by the action of influences that tend to depress the bodily forces. It is merely necessary to refer to the familiar facts of grief, prolonged anxiety, the long watching of beloved relatives in fatal illness, imprisonment, and the like, or to those of unfavorable occupations, or to such diseases as measles, whooping-cough, certain forms of pneumonia, diabetes, or to misadventured or too frequent child-bearing, and unduly prolonged lactation. I name these merely to complete the outline of the sketch which you have done me the honor to listen to at such length.

PHILADELPHIA
MEDICAL TIMES.

PHILADELPHIA, JANUARY 28, 1882.

EDITORIAL.

UNITED STATES PHARMACOPŒIA.

AT the convention in 1880 a good deal was said concerning the slowness of the committee of 1870 in revising the Pharmacopœia. Probably at least the members of the present committee appreciate by this time the labor involved in preparing a new edition of our national standard, and have some inkling why Rome was not built in a day. Almost two years have rolled by since the Washington conference, but even now we are glad to be able to announce that the Pharmacopœia will probably go to press in March, and be out, we suppose, some time this summer. It is fortunate that the convention gave the committee of revision a perpetual existence, since circumstances seem to indicate that the present revision will have to be altered very speedily. The bill before Congress for the prevention of adulterations of food and medicine recognizes the United States Pharmacopœia as the legal standard; and a medicinal preparation which does not agree with its directions cannot be sold under an officinal name. This will be, if the bill becomes a law, the first legal recognition of our Pharmacopœia, and is undoubtedly a gain in restricting "free trade in medicine;" but it also brings inconveniences. Hitherto the Pharmacopœia has directed processes rather than standards of excellence. It recognizes a laudanum that has been prepared in a certain way, rather than a laudanum which contains a certain percentage of morphia and possesses certain physical properties. It is plain that this will have to be amended. If a preparation represents a certain amount of the drug thoroughly and contains no impurity or improper ingredient, it should be allowed to pass current. Moreover, the processes of the Pharmacopœia are usually adapted for use on a small scale; and a large manufacturing capitalist can often, by the employment of machinery, etc., obtain equally good results much more cheaply in his own way than by following the Pharmacopœial direction. Suppose Tilden & Co., or any other large firm, puts upon the market an extract of nux vomica which contains as large a percentage of alkaloids as does the officinal preparation, has the government any right to inquire how this extract is made? Or take the case of an alkaloid: if the strychnia offered for sale is strychnia, has the government any right to know whether it has been prepared from nux vomica or by some newly-discovered synthetic process? Plainly not. Policy demands that the lives of citizens shall be protected against impure drugs, but it also demands that every proper stimulus should be given and every proper liberty allowed to the manufacturer who would cheapen and improve processes.

There is another reason why results, not processes, should, whenever possible, be the standard of excellence. Crude drugs vary, and it is possible for a preparation made honestly to be worthless, as it is possible for it to be much stronger than the average: in either case there is uncertainty and evil; but a laudanum or other tincture which is made to contain a fixed percentage of alkaloids is a uniform preparation.

IT is stated that Mr. Charles Crocker has given to the California Academy of Science twenty thousand dollars, the income of which is to be used for the furtherance of original research in the far West. It is curious to note how new ideas take root and bear fruit in the virgin soil of the West rather than in the conservative East. Original research is the only way of pushing forward the territory of known

science; the future growth and welfare of civilized peoples depend upon it; and yet, with the hundreds of thousands every year set aside by rich persons in our Eastern States for the purposes of education, rarely is a dime directed towards that which must precede all education,—namely, the discovery of truth.

For the sake of the general profession and the growth of good among us, we are glad that public opinion, second thought, or some other to-be-praised influence has led the editor of the *Medical News* to try to modify, soften down, or explain away the editorial upon free trade in medicine which we had occasion recently to discuss. The method employed of getting one of the editorial staff to write a letter over his own signature as a correspondent, to be commented upon by the editor, is ingenious; but it would probably be found better in the future for the editor-in-chief to supervise closely what some of his subordinate editors write.

We would call attention to the kymograph invented by Dr. Reichert, and described in this number of the *Times*. We have never seen the instrument, but can state that we have never seen, either in this country or in Europe, clearer or more regular tracings than those which have been submitted to us as examples of its work.

LEADING ARTICLES.

COLOR-BLINDNESS.

WHEN we consider the innumerable tones and shades of color* existing between the red and the violet ends of the solar spectrum, in connection with the limited color-spectrum of a normal human eye, we are forced to the conclusion that every person is, in a certain sense, color-blind. Lockyer† says that Chevreul was able to distinguish and designate fourteen thousand four hundred and twenty different tones of color. Here was a man who, by education, caused his color-seeing organ to recognize such a great number of changes that he is quoted as remarkably acute; and yet we see how low his power of color-perception falls, when we think of the billions of differences that might be perceived. We cannot doubt that there is a limit for color-perception in the human species, when we think of the limits of sensible sound. Helmholtz‡ states that the deepest tone perceptible to the human ear is one of sixteen vibrations to the second; and Turnbull,§ after careful experiment, comes to the conclusion that sixty thousand vibrations per second is the extreme for the most sensitive human ear.

Tyndall says‖ "that the squeak of a bat, the sound of a cricket, even the chirrup of the common house-sparrow, are unheard by some people who, for lower sounds, possess a sensitive ear;" and Herschel remarks,¶ "Nothing can be more surprising than to see two persons, neither of them deaf, the one complaining of the penetrating shrillness of a sound, while the other maintains there is no sound at all." The human ear, as it now exists, is unable to differentiate every grade of sensation within the notes of lowest and highest pitch; and every person (to use an imperfect term comparable with color-blindness) is suffering, more or less, from sound-deafness.

We must not confound with true color-blindness** an inability to recognize delicate differences of color, which is simply the result of the lack of color-education. In looking over the various statistics, we are struck with the vast majority of the

* According to Geissler, a tone of color is the result of the union of two or more pure colors or tones of color, and a shade of color is the result of the addition of different percentages of black and white to any pure color or tone of color. Maxwell defines these two qualities as hue and tint; whilst Hering, who places black and white among the primary colors, considers them identical.

† "The Forces of Nature." Translated from the French of Amédée Guillemin, by Mrs. Norman Lockyer, 1873, p. 322.

‡ Tyndall "On Sound," 1869, 2d ed., p. 72.

§ "Experiments to determine the Limit of Perception of Musical Tones by the Human Ear." By Laurence Turnbull, M.D. Abstract from a reading before the American Association for the Advancement of Science, August, 1874.

‖ Tyndall "On Sound," 1869, 2d ed., p. 73.

¶ *Ibid.*

** This definition is based on the assumption that the human color-seeing organ, as it now exists, is for two reasons incapable of perceiving every spectral color. 1st, On account of physical inability caused by the want of, or the incapability of, certain elements to be acted upon; and, 2d, through deficient functional activity, dependent upon lack of training and want of education:—the former a true or physical color-blindness,—orthoachromatopsie; the latter a false or physiological color-blindness,—pseudoachromatopsie; the former incurable in individual cases, the latter capable of amelioration.

male color-blind, which brings us to the thought, Why? The organ of color-seeing is the same, and possesses the same character of functional activity, whether it be placed in woman or in man. Of what significance to the eye is a difference of sex? How can a difference in a system of generative organs affect an independent factor? Girls can and will sort and differentiate colored wools more accurately, as long as the female lines of generation shall live among color, and the male sex cannot possibly expect to reach their system of minute grading and shading until the choice and selection of color shall become a daily routine.* A series of healthy eyes will give far different results in direct proportion as they have been reared among colors. We all understand, and give perfect credence to the assertion, that a trained musician has by experience enabled himself to enjoy musical sounds which are wholly ignored or unheeded by a less trained auditory apparatus. Thus education and training bring into sensible activity elements of color-seeing and sound-hearing that have remained dormant and unused,—a lifting from false color-blindness. To assert that a person whose eyes are not trained to detect delicate differences of color is physically color-blind would be as foolish as to declare that an uneducated and unused muscle is incapable of proper action if correct stimulus be applied.

It is useless to argue that the prevalence of color-blindness was not greater among the ancients than it is at the present time. Pliny, in speaking of the paintings of Apelles, who flourished about three hundred years before Christ, says† "that all these wonderful paintings, which were the admiration of all mankind, were painted only with the four primitive colors;" and Cicero, in one of his books *De Oratore*, makes Crassus, in a conversation upon the comparative beauty of ancient and modern painting, say, "Let us, for instance, consider our modern paintings. Can anything be more splendid and lively? What beauty, what variety of colors! How superior are they in this point to those of the ancients!" and Dionysius Halicarnassensis, who flourished about the time of Augustus, remarks‡ that "the ancients were great designers, and understood perfectly all the grace and fervor of expression, though their coloring was simple and little various. But the modern painters, who excel in coloring and shades, are vastly far from designing so well," etc. The belief that we possess a finer color-sense and a larger and more complex color-spectrum than the ancients may also be deduced from the rule that the use of an organ must render it stronger in its power and more extended in its action; and if this be carried from generation to generation, *physical alteration must occur.* Dr. Erasmus Darwin, in his beautiful little poem "The Temple of Nature," says,§ "Perhaps all the productions of nature are in their progress to greater perfection." The converse action of use teaches us the same truth. Charles Darwin gives‖ numerous examples in the blind animals found in the blackest recesses of the Styrian and Kentucky caves, such as rats, beetles, fish, serpents,—even crabs possessing eyeless foot-stalks, "stands for the telescope, though the telescope with its glasses has been lost."

It is not presumptuous to assert that there will be a time when the color-seeing power of the human species will far exceed anything dreamt of at present; but shall the eye ever become a perfect organ for color-vision? Will there not be something more for it to conquer? A search for the unobtainable!

True color-blindness is nothing more or less than the want of, or the incapability of, certain color-perceiving centres or fibres to respond to the correct application of proper stimulus.

If the assumption be true that all in the human species have a certain percentage of color-blindness dependent upon the variation from a standard of seven pure colors with a certain unknown quantity of tones and shades, it remains only to find those cases in which the defect becomes so great as to assume the character of disease. The moment we find a color-seeing organ incapable of recognizing one or more of these seven colors, and, as a consequence, a certain amount of tones and shades, we must place it on the pathologi-

* This is well exemplified by the ability of the *male* operatives of a well-known dental depot in this city to tell, at a moment's glance, the number of a tint of enamel in a set of artificial teeth, from more than fifty varieties.

† Rollin's "Arts and Sciences of the Ancients," Eng. trans., 1737, vol. i. p. 241.

‡ Rollin, *op. cit.*

§ "The Temple of Nature, or the Origin of Society," by Erasmus Darwin, M.D., etc., 1804, p. 47 (in foot-note).

‖ "On the Origin of Species," by Charles Darwin, 1860, pp. 125, 126.

cal side of the question. We have thus reached the usual signification of the popular definition of color-blindness.

The naming of the varieties of color-blindness depends entirely upon whether we designate a color-blind by the colors he sees, or by those which are invisible to him. For instance, Mauthner bases his division upon the colors seen, and obtains the following terms: xanthokyanopie (yellow-blue seeing), and erythrochloropie (red-green seeing).* Szokalski makes five groups on the same plan. Wilson, Rose, Holmgren, and others obtain their systems from the imperceptible colors or color. The best selection of terms is—1st, total color-blindness, "achromatopsie," where nothing but the black-white group, with its innumerable grays, is present;† 2d, partial color-blindness, which may be divided into red-blindness, "anerythropsie," green-blindness, "achloropsie," and violet- (blue-yellow-) blindness, "akyanopsie," "axanthopsie."‡

Magnus relates§ an exceedingly interesting case of a totally color-blind schoolteacher, who compared her color-spectrum with a very finely executed lead-pencil shading growing darker from the natrium line‖ towards the unshortened end in such delicate gradations that the different gray wools were not sufficient to represent them.

The case of the green-blind painter reported by Hirschberg¶ is very instructive. The red-orange-yellow and the violet-indigo-blue parts of his color-spectrum were perfectly normal, having between them a gray zone exactly corresponding to spectral green.

Many instances might be cited of red and red-green color-blindness; but space will not permit.**

Holmgren's monocular blue-yellow color-blind†† is worthy of mention, by reason of there being a neutral, colorless, narrow zone in green-yellow, which separated the red from the green half of his color-spectrum, the patient calling this zone paper-white.

Some curious cases of monochromatic color-blindness have been reported elsewhere.‡‡

We are now brought to the interesting fact that independent of the congenital and hereditary anomaly we have a variety designated as acquired color-blindness, produced by pathological change during the progress of many diseases of the nervous system. Here, color-perception may be gradually or suddenly lost, with or without decreased visual acuity. Schirmer gives§§ some important notes of gradual failure of both central and peripheral color-perception, with their order of progression. Beginning with green, red is next lost, then yellow, and lastly blue.‖‖

Sudden loss of color-sensation is comparatively rare. Tyndall cites¶¶ a case of a sea-captain who, one evening whilst embroidering, suddenly found that he was unable to distinguish red from green; the infirmity remained permanent.

The occurrence of congenital defects of other sensory organs with color-blindness is very infrequent, there being an almost unique instance in Jeffries's case*** of a celebrated poet, who, besides being unable to distinguish many colors, is almost entirely incapable of differentiating musical sounds; and yet how curious, as Jeffries states, "the kaleidoscope of nature and the harmonicon of art are the Utopias of his mind. The magic hues developed by the prism, the iridescence of shells and minerals, the inimitable colors of the beasts and birds of tropical climates, the verdure of the fields of spring, the splendor of the autumnal foliage of the forests, the myriad hues of flowers, . . . all these, it would appear, are comparatively 'as a sealed book' to him. Yet from his writings no evidence of this can be detected."

It would be of but little value to make inquiry into the merits of the various methods of determination. Merely naming a few,

* Vorträge der Augenheilkunde, von Dr. Ludwig Mauthner, 1879, 4 Heft, S. 179 (Farbensinn).

† Compare Hering's theory in previous article.

‡ We should be careful not to confound the term difficult color-vision, "dyschromatopsie," with the terms used in color-blindness, as we so often see in the many text-books and monographs written upon the subject.

§ Centralblatt f. Prakt. Aug., 1880. December, p. 373 (Ein Fall von angeborener totaler Farbenblindheit).

‖ A very sharply defined yellow line in yellow. See Morton and Leeds's Practical Chemistry, 1866, p. 55, and plate facing p. 123.

¶ Arch. f. Anat. u. Physiol., 1878 (Physiol. Abth.), 3, 4, S. 324–332 (quoted in Schmidt's Jahrb., Bd. 191, S. 100).

** See Dalton's case, Edin. Jour. of Sci., No. ix. (Art. x.) p. 88, from Memoirs of the Literary and Philosophical Society of Manchester, 1798, vol. v.

†† Quoted in Schmidt's Jahrbücher, 1881, Nr. 7, S. 98.

‡‡ Dr. M. Woinow, Arch. f. Ophth., 1871, xvii. 2, S. 246. Dr. Otto Becker, idem, 1879, xxv. 2, S. 205. Dr. A. v. Hippel, idem, 1880, xxvi. 2, S 176.

§§ Dr. Rud. Schirmer, Arch. für Ophth., 1873, xix. 2, S. 194–235.

‖‖ This order of progressive loss cannot be accepted as absolute, there being many exceptions.

¶¶ Tyndall, "The American Journal of Science and Arts," vol. xxii. 2d series, 1856, July, pp. 143–146.

*** Color-Blindness: its Dangers and its Detection. By B. Joy Jeffries, 1879, p. 105.

such as Mauthner's series of colored powders enclosed in vials, the pseudoisochromatic wools of Donders, Stilling's color-plates and colored shadows, the color-triangle of Lips, Pflüger's color-book based upon simultaneous complementary color, Hirschberg's double spectroscope, and the polariscope of Rose, we pass to the series of wools proposed by Holmgren,* a plan by which a subject having a certain test-skein placed before him sorts and places all similar skeins with it, it not being necessary to designate any color.

Common sense teaches us to accept the conclusion that the congenital form of true color-blindness is incurable. The question now comes forward, can the world be so modified by the interposition of certain media (as in errors of refraction) as to give to the abnormal eye the proper impression of color? Repeated experiment by intelligent color-blinds, with colored solutions, such as nickel chloride and fuchsine enclosed in glass, show very little, if any, gain.

Of course, in acquired color-blindness, color-perception is decreased (passing through the stage of lowered color-sense) in exact proportion as nervous power is lost. It stands to reason that if here there be a normal material ready to be acted upon and respond when proper stimulus is brought to bear upon it, color-perception can be, and is often, regained.

CHARLES A. OLIVER.

PROCEEDINGS OF SOCIETIES.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

A CONVERSATIONAL meeting of the Society was held at the hall of the College of Physicians, Philadelphia, November 9, 1881, Dr. Albert H. Smith, President, in the chair. Dr. Oscar H. Allis read a paper entitled "Can Pott's Disease of the Spine be Cured in Childhood without Subsequent Deformity?" (see p. 273), and Dr. James C. Wilson on "What Constitutes a Predisposition to Pulmonary Phthisis?" (See page 277.)

DISCUSSION ON POTT'S DISEASE.

Dr. De Forest Willard said, "It is evident, both from theory and experience, that if we have disease of the vertebral bodies—and if we have no disease of the bones it is not, properly speaking, a case of Pott's disease—there is no way in which the patient can be cured without the sinking of the bones and anchylosis. I can see no other mode by which a cure can be obtained; and, in truth, I have never seen a case in the practice of any one in which a favorable result has occurred without more or less deformity. If the caries is arrested early and the amount of destruction slight, the amount of resulting deformity may be small; but if several vertebræ are broken down, they cannot be replaced, and we can only hope for anchylosis with as little distortion as possible. There is not only deformity, but rigidity of the spine necessarily. This can always be observed when the patient stoops, though eventually the stiffness of this portion of the spine is in a measure compensated by the rest of the back becoming more movable. It follows also that there is always a slight projection of the spinous processes of the diseased vertebræ; although this may not be very marked. I cannot see how it is possible for anybody to cure a case of Pott's disease of the spine without deformity, though it may be slight."

Dr. Henry H. Smith coincided very fully in the opinion given by the lecturer with regard to the impossibility of cure of this disease without deformity. The question is an old one, and many members present had seen specimens in the lecture-room demonstrating the fact that the supposed cures were deceptive. The explanation of their reported cures is very simple: the surgeon takes the outline of the spinal column at the commencement of treatment; subsequently by the use of fixed dressings the shoulders are forced back, and the outline of the back appears to be straighter, but the spinal column remains as crooked as before. He wished to add the expression of his own opinion to that of the lecturer, that *there never was a case of caries of the spine cured without deformity*, and he defied any man to present a specimen before this Society showing the diseased bone healed without approximation of the bodies of the vertebræ and caving-in of the column.

Like the lecturer, he had felt the inconvenience of being too candid. Having told the friends of a little patient that a cure would not be obtained without some deformity, he had seen the case go into the hands of other surgeons, who promised better results, but after-events had shown that deformity occurred, nevertheless. This conduct he denounced as a form of quackery in the profession; he had fought this question for years. He had repeatedly demonstrated that it is practically impossible to have a cure without approximation of the adjoining vertebræ,—a result which would be favored by the weight of the viscera and superior extremities inducing flexion of the spine. Without entering into the mechanism, however, he would state

* Skeins of colored wool first made use of by George Wilson in 1855.

that all the cases presented before various large assemblies of the profession as cured had been of the character he had just mentioned, in which the attendant has been deceived. Patients may be hung, and twisted, or purged, but they cannot be cured of Pott's disease without deformity, when once developed.

In reply to a question, he said that the disease is undoubtedly tuberculous, but patients do not necessarily die of pulmonary phthisis; a case may live to be sixty years of age, or older, without developing lung-disease. The disease was well described by Pott, but he unfortunately characterized it as "paralysis of the legs," which was only one of the prominent features. Patients may certainly recover and live to old age without further manifestation of tubercles, but some prominence will always be present in the back.

DISCUSSION UPON HEREDITARY PREDISPOSITION TO PHTHISIS.

Dr. H. C. Wood said that where change of climate does good in phthisis, it benefits not so much by curing the predisposition to the disease, as by correcting the exciting causes of the malady. One other point deserves consideration,—individuals are born with a certain amount of vital power, and they perish at a certain period, because they have lived out the cycle of their vitality. This is true not only of race but of families. Some families perish early, in others longevity is marked. Now, what is true of the general system is also true of a part. An individual may be born with a general system calculated to live to eighty years, but the vital power of certain organs is exhausted earlier. The question of continued existence then settles down to the vital resisting power to destructive agencies. This sometimes applies to the organism as a whole, and again to the organs individually.

Dr. George Hamilton, in corroboration of the remarks of the preceding speaker, gave an instance of long-lived parents who had a number of children to perish at early maturity with consumption. He could only account for it on the score of inherited predisposition. The family lived in the country, and when it came under his observation it consisted of three persons,—the father, about eighty, the mother, nearly as old, both very healthy, and a son of twenty years. Six children had perished between the ages of fifteen and twenty, from consumption. A sister of the mother, then apparently healthy, a year later had decided evidences of phthisis. Another sister, who was subject to sore throat, died later on, and also her daughter, both with the same disease. Finally the mother of the family died, at the age of eighty-three years, of consumption. The speaker afterwards learned that her brother, although robust at forty-five years, had suffered from hemorrhages from the lungs when a young man.

In another family, of seven sisters and one brother, five of these sisters died of consumption when young. One of the other two sisters and the brother died of other complaints at an advanced age. The remaining sister—the eldest of the family—died of acute disease in her ninety-third year, and had given birth to eleven children, not one of them affected with phthisis.

Dr. J. T. Eskridge agreed with the views expressed upon the hereditary predisposition to phthisis. Out of one hundred cases coming under his observation, there were forty-four who had lost both parents with the disease, seven had lost one parent, in six cases other members of the family had died of consumption, making fifty-seven per cent. with a direct family history. Of the remainder, fourteen had acquired the disease. In nineteen there was a good family history. In ten the antecedents were uncertain. In seven the husband or the wife was originally affected.

He agreed also with Dr. Wood that certain families are long-lived, but it is equally certain that the members may be prematurely cut off by acute disease. In the same way certain organs may be weak and fail early, but by recognizing this vulnerability may be preserved, by proper treatment, for many years. With regard to the asserted dislike for fatty articles of diet, he had found that seventy-five per cent. of consumptives did not exhibit this peculiarity.

Dr. F. Woodbury said that while he endorsed fully the views expressed by the lecturer, at the same time he would beg to say that there existed in his own mind a decided distinction between influences which predispose to phthisis and the predisposition itself, and a definition of one does not necessarily include the other. He would concede that some children are born with a vice of constitution which renders them peculiarly susceptible to the development of tuberculosis at certain periods of life, but he believed that no fact in modern pathology is more generally acknowledged than that this vice of constitution may also be acquired by persons who have no such inherited tendency. The observations of Prof. Bowditch, for instance, have shown the relationship of a damp soil to the prevalence of consumption, and it is well known that of the natives of the south of Europe, particularly the Latin races, the families, after immigrating to this country, are particularly liable to die out in one or two generations with phthisis. Alcoholism, dissipation, and anything tending to reduce the system much below the normal standard, and especially chronic inflammatory pulmonary affections, will also produce phthisis in persons who have not especially consumptive antecedents. Recent experiments also appear to establish the fact that this disease can be

communicated to healthy animals by inhalation of pulverized caseous products. Therefore, the old dictum that phthisis occurs only in certain persons possessing the inherited predisposition must be abandoned, as Niemeyer taught years ago. In conclusion, the use of the term "predisposition," as applied before the existence of any disorder, seemed to him to be open to criticism; a susceptibility to disease certainly is compatible with physiological health, but in a strictly normal organism no specific tendency to disease can exist. Such a decided tendency as is implied by a predisposition to phthisis appeared to the speaker to indicate a morbid state in actual existence, and therefore really applicable only to some of the early prodromata of the disease.

Dr. J. Solis Cohen, responding to a question, said that he had seen the statement made that the Jewish race was not subject to tubercle; but he had not made the subject a special study; he could only say that in his own practice he had found no such exemption. If the race possesses superior longevity, it may be attributed partly to the careful observance of hygiene.

In confirmation of Dr. Wood's remarks he said that he had long been impressed with the belief that individuals are born with a certain amount of vitality which enabled them to live a certain term which could not be extended by any treatment, though it could be diminished by many causes. Here, he believed, lay one solution of the greater recuperative powers of children; and as but one example among a number of this limit of viability he would instance a family in which the children all perished with phthisis upon reaching a certain age, the parents surviving as healthy individuals. His own observation was that it is not necessary for the patients to suffer from phthisis themselves in order to transmit this vulnerability to their offspring, but they may suffer from any disorder which reduces their vitality, such as prolonged anxiety or imperfect nutrition; other causes are equally potent. Another point was suggested in connection with the subject of the preceding paper. In some families all the children except one may die of tuberculous disease of the lungs or brain, while the survivor ultimately has caries of the spine. It is possible here that the vertebræ may be more vulnerable than the lungs.

He had long been impressed with the idea that the lungs suffer to so great an extent because of their peculiar structure, and because they are exposed to such marked atmospheric changes. Upon an examination of the mortuary records he had found that more than one-fourth of all the deaths of adults in Philadelphia were from consumption of the lungs, and deducting the sudden deaths it would rise to fully one-third.

His experience is that the disease is much less frequently inherited than acquired. The predisposition to phthisis is simply anything that reduces the strength of the constitution. Individual vitality has much to do with the development of the disease. Frequent miscarriages among females, and the want of sunlight, especially among the operatives in factories, are also predisposing causes.

Dr. M. S. French remarked that under his own observation and that of another, a physician of large experience, there had never occurred a case of phthisis in an individual with a bald head.

Dr. William S. Stewart called attention to the communication of phthisis by the milk from tuberculous cows, and he also referred to the prevalence of tubercles in the lungs among the swine fed on slops near our large cities, whose meat is constantly consumed by the community. He thought that such food would favor the development of human tuberculosis: diseased milk certainly has a direct influence upon infant mortality.

Dr. R. A. Cleemann, in reply to Dr. Eskridge's statements in regard to the transmission of phthisis by family inheritance, said that the prevalence of the disease must be borne in mind: on account of the large numbers affected, nearly every one must have some relative who had perished with consumption. In old families, especially where consanguineous marriages are encouraged, by breeding in and in, as the farmers say, the development of phthisis is encouraged. While it cannot be denied that there is some inherited liability, the tendency is not so great as is laid down by some writers.

Dr. J. C. Wilson, in conclusion, said that he had noticed the tendency in some families for the children to perish at an early age with consumption, especially the tubercular form, and instanced a family in which a tuberculous mother lost two children with consumption at the age of seventeen years, and a third one is now affected. The father also perished from the same disease. Consumption of the lungs does not increase in settled communities so much as might otherwise be expected, because the children who show the highest degree of predisposition to phthisis perish early, not always from disease of the lungs, but often from tubercular disease of the intestines or meningitis. They, therefore, do not reach the age to transmit the peculiarity. The increase of the disease is prevented by the vulnerability of the children predisposed to it.

With regard to the distaste for fatty articles he reasserted his conviction in the truth of the observation of the older writers. Since reading Horace Dobell's interesting speculations upon the cause of phthisis he had asked his patients, "Do you cut off the fat from the meat at the table?" and they almost invariably replied that they did, and rejected the fat.

With regard to the nature and communicability of tubercle he did not speak, as they

were foreign to the subject of his paper, but would simply state that whatever may be the exciting product which leads to tubercle in the individual, it may also pass out of the body in the organic matter of the expired air, and become the direct cause of tuberculosis in a second individual. As to the diseased milk and flesh, he believed that the same peculiar material may be transmitted in food, and become a source of infection in man, by passing from the stomach into the blood without digestion.

A METALLIC TAMPON.

Dr. Samuel R. Skillern exhibited a dome-shaped metallic tampon, which applied to the ostium vaginæ prevented the escape of fluids. It should be secured with a T-bandage. He obtained the idea from the shield of an old-fashioned metallic vaginal syringe: he had used it very successfully for a number of years, and considered it as superior to all other methods of checking hemorrhage.

Dr. H. H. Smith said that he had seen a similar instrument in use thirty years ago, in the hands of the late Dr. Beasley.

NEW YORK ACADEMY OF MEDICINE.

A STATED meeting was held January 5, 1882, Dr. FORDYCE BARKER, President, in the chair.

The paper for the evening, entitled "The Treatment of Diseases of the Middle Ear and Contiguous Parts by Milder Measures than those commonly in Vogue," was read by SAMUEL SEXTON, M.D.

Before proceeding to consider the subject of treatment, the author spoke of the etiology, symptoms, and diagnosis.

The cases of suppurative disease of the ear might be conveniently arranged etiologically under three heads,—viz.: first, those arising from nervous symptoms; second, from extension of catarrhal inflammation from the nasal pharynx to the Eustachian tube; and third, mechanical or direct causes.

Speaking of diseases of the ear arising from nervous symptoms, the author said, "I have thus seen many cases where the etiology could readily be traced to painful conditions of the uterus and ovaries." The ear was left sometimes subject to an attack of an acute nature from the effect of wetting the hair of the head and allowing it to slowly dry, from clipping the hair too closely, and very frequently from exposure of the head and neck to draughts of cool or cold air. Hereditary influences were referred to, and also age and sex. In his experience it occurred more frequently in males during adult life, and among females during childhood.

With regard to the parts affected, the diseases of the ear might again be divided into—first, catarrhal inflammation of the air-cells of the mastoid; second, periostitis of the external auditory canal; third, periostitis externa.

With regard to treatment, certain measures were too frequently resorted to, both by the laity and the profession, under the idea that they would do no harm, and many cases which under milder measures would have received the greatest benefit were thus rendered worse, or the disease protracted. The author, in this connection, referred to the common practice of syringing the ear, of poulticing, of plugging, of astringents, and of inflation with air.

In starting out some years ago to endeavor to manage these cases by milder methods, he found his greatest encouragement come from an unexpected source, namely, neglect on the part of patients to carry out the plan of treatment which he had thought best to recommend. The case which impressed him most strongly with regard to the propriety of milder measures was that of a patient suffering from a large and painful swelling over the mastoid process, who refused to have an operation done for cutting down upon the bone. Dreading pain, the patient absented himself for several weeks, during which time he continued the use of calcium sulphide, which had been prescribed; and when he came back, much to Dr. Sexton's surprise, his condition had greatly improved, and the pain and swelling over the mastoid process disappeared without an operation. This and other reasons led him to the supposition that certain of the established methods of treatment in aural disease might be dispensed with.

It would be disputed by none that absolute rest was indicated in the early stage of acute inflammation of the middle ear, but the author would supplement this with the injunction to maintain rest of the ear itself. In other words, the inflamed organ should be but little disturbed by local applications and manipulations. If the patient was seen before a discharge from the ear had commenced, the drum-head should be carefully inspected through the speculum by the aid of light reflected from the head-mirror, and if found inflamed, but not greatly bulged out by pressure of secretion, it should not be subjected to any local treatment whatever; but if there were thickening and great distention, the question of paracentesis would present itself. The author, however, always gave the patient the benefit of the doubt if any existed, and postponed the operation. Paracentesis was not always easy of performance even in the adult; and in the young and weak, anæsthesia was required. When the condition of the teeth, of the naso-pharyngeal mucous membrane, of the uterus, etc., had an influence upon the aural affection, diseases of these organs should be remedied. Later on, when muco-purulent material was retained in the auditory canal, decomposition might take place in warm weather, and gentle syringing with warm water might be required. Certain

of the more simple and uncomplicated cases would be cured within a short time,—a few weeks, or even a few days; but many would require constitutional measures. The necessity for observance of the hygienic laws in this disease is well known to every practitioner.

Some years ago, in a case of furuncles of the ear, the author employed the sulphide of lime with satisfactory results, and subsequent experience had demonstrated its value in most acute inflammations of the middle ear and contiguous parts. In a somewhat extensive experience he had found the sulphide of calcium to exert a more favorable influence over acute aural inflammations than he had hitherto obtained by any other treatment, this drug seeming to possess the power to stop the inflammation. Its therapeutical action he could not explain.

With regard to the special indications for the employment of the sulphide of calcium, he would say that whenever acute inflammation, with or without suppuration, existed, he would recommend it. Its continuance and the length of time during which it should be employed must depend upon the indications in each individual case. He gave it in one-half grain doses, repeated every three or four hours, and seldom found it necessary to increase the amount. A smaller dose was sometimes preferable, especially in children. The effect of this drug was often to dispense with the use of the knife or leeches about the ear.

Local pain, sometimes only occasional and of a darting character, might fail to be relieved even by large doses of opium, and the author did not believe in placing the whole system under the influence of profound narcotics, which were known to interfere with nutrition when largely employed, for the purpose of relieving a local symptom, until less baneful remedies had been tried. He referred to pulsatilla, aconite, and gelsemium; sometimes one, sometimes the other of these, given in small doses every few minutes or few hours, would be found useful.

Trephining the mastoid was by no means as harmless an operation as its ease of performance would indicate, and it sometimes led to a fatal result. Moreover, pain, which was supposed in such cases to indicate danger of the brain becoming implicated by the disease, and therefore called for the operation of trephining, was not by any means pathognomonic of danger to the brain. While he would not discard this operation altogether, he believed that it had been performed needlessly in many instances. It was stated by most authorities that the operation was followed by relief from the urgent brain-symptoms, together with relief from pain, a point which Dr. Sexton could not understand the philosophy of, and was disposed to doubt as a clinical fact. The author then related the circumstances under which he would think it proper to do trephining and to remove sequestra of bone, and again alluded to the efficacy of calcium sulphide in the constitutional treatment, especially in persons of a certain dyscrasia, as scrofula.

DISCUSSION.

The paper being before the Academy for discussion, Dr. BURNETT, of Philadelphia, by invitation, spoke as follows: I desire to thank the Society for the privilege of listening to this paper; and although I came to listen, not to speak, I may say that as far as my experience goes I can endorse all that the author of the paper has said. With respect to some points, however, I have had no experience. The author alluded to the fact that there are a great many neuralgic affections of the ear which are mistaken for inflammation of that organ. Unfortunately, I have seen a large number of these cases in which the neuralgic disease has been mistaken for an inflammatory one and has been treated as such, and when the surgeon has finally come to view the disease in its true light he has found, if I may use the term, an artificial disease which he has set up by improper treatment. These are, perhaps, among the most important diseases that any of us meet with, because a great deal of damage is really done by surgical or medical interference. Patients themselves, I know, often treat these diseases as inflammatory, and a long time might be taken up by a mere recital of the peculiar way in which the disease has been mistaken and wrongly treated.

With regard to disease of the mastoid portion, there is an infinite amount to be said, as suggested by the essayist of the evening. I have been obliged by various circumstances to view the natural history of some cases of mastoid disease, and I have learned thereby a great deal.

Dr. Burnett then related a case of mastoid disease, the patient refusing an operation which had been suggested, and yet the disease went on to recovery. He also related another case of mastoid disease in which, owing to the miscarriage of a message, a proposed operation was not done, and the patient recovered. In a case of severe traumatic injury to the ear, after which the patient lost for a time his reasoning power, a sequestrum of bone, evidently composed of mastoid cells and a portion of the posterior wall of the auditory canal, was removed, and the patient recovered almost his perfect hearing.

His experience with the sulphide of calcium in the treatment of inflammatory diseases of the ear limited itself to a single case, which he saw in consultation. The patient was a young man, strong and hearty, and was suffering from furuncles of the ear. His physician had tried about every remedy known, but without success. I recommended the cessation of local treatment, and suggested the sulphide of calcium. He recovered without hav-

ing any more furuncles, although, as you all know, the tendency of this disease is to recur in crops. I believe, however, from the experience given by the essayist, that it is a valuable remedy as a resolvent, if I may so use the term. I would ask Dr. Sexton whether he would limit the use of this drug to cases in which the patient is strong and of full habit, or whether it may be given to any class of persons.

Dr. ROOSA.—Mr. President and gentlemen: The essayist has been very frank in his paper, and I propose to be very frank in the few remarks that I shall make in reply. With regard to that portion of his paper which treats of the etiology of aural disease, I have very little to say. We are all tolerably familiar with the accepted etiology, and there would be no difference with the distinguished speaker except, perhaps, that he lays more stress on what he calls reflex nervous influences than most authors do or have done. With regard to that portion of his paper in which he speaks of the treatment of necrosis and the removal of granulations, I have nothing to say except in the way of commending it to all for a sound surgical trial.

But with regard to all the rest of his paper—with regard to the sulphide of calcium; with regard to pulsatilla; with regard to the abstaining from surgical interference—I am so decidedly at variance with the author that I am embarrassed in announcing my opinions. If the gentleman, formerly President of this Academy, who has left the room, were here, I should ask him to get up instead of getting up myself. It was he who taught me the surgical principle that free vent should be given to concealed pus; that swollen and inflamed muscular and connective tissue and periosteum beneath it should be incised; and I have criticised, as a pupil may, his teachings, but I find my own experience quite different from that of the speaker, that those principles are correct to this day.

I cannot verify the experience of the gentleman who has spoken with regard to sulphide of calcium. I have tried that drug in furunculous inflammations of the external auditory canal, I have tried it in diffuse inflammation of the external auditory canal, and I have never known it, in my own experience, to have any effect whatever. I have never dared to try it in acute inflammation of the tympanic cavity. This question becomes one so largely of personal experience that it is difficult to speak intelligently upon it; one man sees what another man fails to see; but I will endeavor to formulate in a very brief manner the principles that I still adhere to, which I have announced in as public a way as it is possible for a man to do, and which, I believe, have not yet been overthrown.

Given a red membranum tympani, and given at the same time serious pain referred to the ear,—and by serious I mean that which will keep the patient from sleep and cause him to shriek with agony,—I do not believe that, if it be not remedied by the warm douche speedily,—as it often is,—there is, as yet, any other remedy to be compared in any manner to leeches; and I think the notion that a leech-wound, or attempts to stop it, cause such serious symptoms that they ought to deter us from using it, will not be verified by most observers.

I believe, also, that if the drum-head be bulging, and at the same time there be considerable pain, it is much safer, although many people get well without it, to incise the drum-head.

My notions with regard to mastoid inflammation correspond with those of the profession generally, so far as I understand them. I admit fully that there is a kind of mastoid inflammation that ought never to be incised. The President of this Academy once quieted my fears about a case of phlegmon of the mastoid process, and by his good advice caused me to wait a little while before incising it, and it got well spontaneously with evacuation of pus through the auditory canal; but that class of cases is easily distinguished from cases of periostitis, external or internal. I will not go over the principles to which I still adhere, and which are familiar to some of you, at least. I am very far from any thought that every case of aural disease is to be attacked with leeches and the knife, but I simply believe, and I have endeavored to state modestly, Mr. President, that there are cases in which local antiphlogistics and the knife are absolutely necessary, and I also state that cases have passed out from under the influence of those who treated them with sulphide of calcium and had to come to the knife after all. Now, I find great similarity in the treatment of my friend to the methods advocated by the Homœopathic Otological Society of this country. There is no reflection, of course, in that assertion, but these are principles of homœopathy. They may be correct, and we may be wrong; but they represent the kind of treatment that I read of in the transactions of my friends of that Society—for some of them are my friends. I cannot, as yet, see that the principles of surgery have been turned upside down, as it would seem to me they had been if we assert, as I understand the author asserted with respect to his own experience, that we do not now see any cases which require leeches or which require the knife.

I regret that the necessary want of preparation to reply to such a paper makes me unable to meet, as successfully as I think they could be met, certain positions which the author has taken; but I shall take, with your permission, Mr. President, an opportunity some time to controvert what I believe to be considered by most eminent and honorable scientists the most dangerous doctrines.

Dr. POMEROY.—I feel embarrassed in getting up to speak, since Dr. Roosa has said about all that I should have done. I think my opinions are almost identical with his. I think almost directly opposite to my friend who has read the paper concerning treatment, and I feel it a solemn duty to express my thoughts in defence of principles which relate to the saving of life and the happiness of our patients. I cannot speak too strongly in combating propositions which undertake, it seems to me, to overthrow well-established principles of surgery,—to wit, the opening of an abscess, the use of morphine to relieve pain dependent upon inflammation, the unloading of blood-vessels that are too full, etc. I must say that my faith in these principles has not been in the least disturbed. The author, I understand, considers the application of leeches a violent measure. Now, the American otologist does not put six, eight, or ten leeches to the ear and exsanguinate the patient. One leech is often sufficient, and when two or three are used no general systemic effect is produced whatever. With regard to pain and irritation, there is no instrument in the world which will produce a painless cut if the mouth of the leech will not. The author, however, has made a good point, which I myself have experienced,—namely, that in bungling efforts to stop the leech-bite you may bring on pain in the ear after it has been stopped by the leech. To avoid this, I apply the leech myself, instead of employing a professional leecher to do it. After giving the indications in hyperæmia, etc., for the application of leeches, Dr. Pomeroy stated that he himself had had otitis, which had been relieved by leeches too often to speak otherwise than in favor of their use in proper cases.

While harm might be done in syringing out the ear, he thought it might usually be avoided, and much good might be done by this procedure in many cases. The dangers would be lessened by adding a little salt to the water. With regard to inflation, he gave certain rules which guided him in its use. He used it frequently, and whenever it was necessary to keep the hearing up to the highest point; but it should not be done oftener than could be helped, as it might do harm.

He was glad to be able to coincide with what the author had said regarding cutting down upon the mastoid. He did not think he could be accused of being tender-hearted, but when he cut along upon the bone a distance of half an inch or so, the patient shrieking with agony, he felt that he was a cruel man; and he had not done it for over a year, finding relief of mastoid swelling and other symptoms by the application of leeches instead.

With regard to paracentesis, he considered the rules laid down by Dr. Roosa impregnable. He did not find it necessary to use anæsthetics in this operation, except in children. He could not understand how an aural surgeon of considerable experience could get along in his practice for several years without the necessity for using leeches in a single case. The author spoke of having acute cases of inflammation relapse frequently. Dr. Pomeroy was in the habit of continuing the application of the leech as long as there remained a dull, aching pain, or even a feeling of heaviness or weight in the ear. He had never used the sulphide of calcium, but did not believe that the drug was capable of performing such miracles as seemed to be ascribed to it. His assistant had used it extensively, and had found it "utterly of no utter use."

Dr. WEBSTER said that he had seen many very bad cases of disease of the ear which had commenced with acute inflammation of the middle portion, and which might have been relieved by commonly-recognized methods, but which, either with or without advice from a physician, the friends of the patient had treated by the let-alone plan. He had no experience with pulsatilla and calcium sulphide, but he would want personally to see some cases treated successfully by those means before he would be willing to discard the warm douche, leeches, and, if necessary to relieve pain, opium.

Dr. SEXTON, in closing the discussion, said that in reply to Dr. Burnett's question with respect to the administration of calcium sulphide, he would say that age, habit, and so on, did make a difference; but the remedy could be used with safety and advantage in any case if properly administered.

With regard to the remarks of the gentleman following him, he was not at all surprised that Dr. Roosa was surprised at what he had read. He expected there would be some surprise expressed at these measures, but no one was more surprised than he himself when he made up his mind that we were prone to operate about the ear too much,—that we were not disposed to let it alone enough. He almost thought, sometimes, that we had better go back to the time when the ear was let alone. Since otologists had been teaching the profession that the drum-head must be perforated, the mastoid must be trephined, incisions must be made right and left, and leeches applied, the thing was coming to be overdone: we had gone too far, and it was well we should take a pause in these directions. The fact that some patients accidentally escaped these measures and did well was what led him to his present views, and he did not now find it necessary to use the knife or to apply leeches, although he did not mean to say that leeches should never be applied. He did not believe that he was more likely to allow his patients to suffer for want of proper remedial aid than were other aural surgeons. He was surprised at his colleague for comparing these means to the rules of the

homœopaths. If he understood the meaning of homœopathy, he failed to see the connection. Calcium sulphide was not a homœopathic remedy, neither was aconite or gelsemium. They were remedies which were used by every physician in various diseases according to the circumstances of the case. With regard to other points in the discussion, his views were expressed in the paper.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

STATED MEETING, JANUARY 5, 1882.

The President, Dr. E. L. DUER, in the Chair.

DR. WILLIAM GOODELL reported the following case of

EXTRA-UTERINE FŒTATION.

Mrs. B. C., æt. 30, had been married two years without conceiving, but on March 19 her catamenia ceased and she deemed herself pregnant. She now began to suffer very much from nausea and from pelvic pains, for which her physician, Dr. W. C. Parry, of Mount Holly, New Jersey, was in attendance more or less after May 6. On May 16, while ironing, she was suddenly taken with a violent colicky pain in her right groin, accompanied by a vaginal flow of blood and by collapse. These colics lasted off and on up to July 15, when she felt relieved. Dr. Parry had meantime discovered a pelvic tumor on the right side of the womb, and had diagnosticated extra-uterine fœtation. But from September 5 to 13 she had great bearing-down pains, like those of labor, attended by some hemorrhage. The cervical canal dilated sufficiently to admit the finger; a miscarriage seemed imminent, but nothing was thrown off. This threw the physician off his track, and he renounced the idea of extra-uterine fœtation for that of natural pregnancy. She had felt fœtal movements, but from this time the child was still and milk appeared in the breasts.

Her health now began unaccountably to fail: she lost flesh and strength, and became bedridden. During the first week of last November she had another hemorrhage with labor-like pains, and the cervical canal and os externum again dilated during the disturbance. From this time she began to fail very rapidly, having chills, a high temperature, a frequent pulse, and quick emaciation. On November 15 I was called in to see her. On account of the excessive tenderness of the parts, ether was given. An irregular tumor occupied the abdomen, but smaller than the uterine globe at eight months' gestation. Neither fœtal limbs nor the fœtal outline could be felt, nor could the presence of any fluid be made out. The cervix uteri was in a natural position, quite hard, and with a small os externum. The sound passed in five inches and to the left. No fœtal sounds or uterine murmur could be detected. My diagnosis was a guarded one, but leaned to an extra-uterine gestation.

On November 24, aided by Dr. B. F. Baer, of Philadelphia, and by Drs. W. C. Parry, A. E. Budd, and R. E. Brown, of Mount Holly, I performed the operation of laparotomy. As soon as the peritoneum was cut open, an adventitious cyst was exposed. I perforated it with a probe, and enlarged the opening with a uterine dilator. Finding that the placenta covered the whole lower three-fourths of the sac, I prolonged the opening upwards and removed the fœtus. It was macerated, and had been dead some time, as the flesh over the ribs was stripped off during the process of extraction. The placenta was now very slowly and carefully stripped off, without any hemorrhage: every preparation had been made to meet one. Not any liquor amnii was present. The sac was then thoroughly cleansed with a carbolated solution, and every antiseptic precaution taken. The opening in the sac was stitched to that of the abdomen, a glass drainage-tube put in, and the wound dressed with salicylated cotton. Up to December 9 everything went well. The wound united perfectly, the stitches were taken out, the temperature had fallen, and the drainage-tube was about to be removed, when, near midnight, she very unaccountably went into convulsions; these recurred and she died comatose on the morning of the 12th. Albumen was found in the urine, and at an autopsy the kidneys were found to be diseased. The fœtal sac had become obliterated, and no relation whatever could be discovered between the condition of extra-uterine fœtation and that of the kidneys which carried her off: the latter seemed to be an accident, and in no wise related to the former. From the history of this case there is no question in my mind that the operation of laparotomy for extra-uterine fœtation must be far more successful after the death of the child. For when the child is living it would, on account of the inevitable hemorrhage, be unjustifiable to remove the placenta; and the presence of so large a mass, which must slough off and putrefy, must seriously compromise the life of the woman. But when the child has been dead for some time the placenta can be safely peeled off and the sac be wholly emptied, as in my case.

Dr. GOODELL also reported

A SUCCESSFUL CASE OF HYSTERECTOMY.

The patient, a mulatto of 35, had cystic degeneration of each ovary. The pelvic and intestinal adhesions were of the most formidable character, making in themselves a long and a bloody operation. But, in addition to these complications, each ovary was so incorporated with the womb that he was obliged to remove that organ. This he did by dissecting off the bladder, by applying the wire

clamp at a point midway between the os externum and the os internum, and by transfixing the stump with two pins. Strange as it may seem, on the fourth and fifth days quite a smart menstrual flux—or, rather, a metrostaxis—took place from this small cervical fragment. The clamp fell off on the fourteenth day, leaving a very large and deep funnel-shaped opening, which is now rapidly filling up. It is now three weeks since the operation, and the patient is convalescent. He stated that ovarian tumors are rare in the colored race, this being the second case only which he had seen. On the other hand, fibroids of the womb and fibro-cystic tumors are more common with them than with the white race.

Dr. B. F. BAER exhibited a

MONOCYST, PROBABLY OF THE OVARY, BUT WHICH CONTAINED LIMPID FLUID.

M. J. T., æt. 40, single; catamenia regular. In October, 1880, she discovered an abdominal tumor in the centre of the hypogastrium. She had been growing thin in flesh with the growth of the tumor. It apparently has varied in the degree of tension, being sometimes more flaccid than at other times. Physical examination revealed a cyst of the abdomen, not very tense, extending one hand's breadth above the navel; the coronal resonance was very marked, dulness on percussion was also marked, and there was perfect fluctuation throughout the tumor. The womb was movable, flexed to the right, and lay behind the tumor. The sound passed in three inches.

From the flaccidity of the cyst, I was at first inclined to believe it to be a cyst of the broad ligament; but the rapid growth of the tumor and the quick emaciation of the patient pointed rather to an ovarian cyst.

On December 31, 1881, the tumor was removed by Professor William Goodell. It was found to occupy a position to the left of the uterus, and was at first thought to be a cyst of the broad ligament, for the following reasons. It was a thin-walled monocyst, and contained a perfectly limpid fluid. The Fallopian tube was stretched over the surface of the tumor and elongated; the fimbriæ were spread out on the wall of the cyst. But after a very careful search the ovary could not be found. In a cyst of the parovarium the ovary usually occupies a position on the side of the tumor more or less closely attached to it by a mesovarium. After the pedicle had been ligated and the tumor cut away, another careful search was made for the ovary, both in the pelvis and on the cyst, but it was not found. The right ovary was found in the normal position, and was healthy. The only portion of the cyst-wall which in any way resembles the remains of a degenerated ovary is a dense white substance corresponding in position to that which would probably be occupied by the ovary; but this forms part of the cyst-wall, as the tunica albuginea does in ovarian cystic disease, and there is no sign of an attachment by a mesovarium.

The interest in this specimen hinges on the organ from which it was developed, if it could be proved that it originated in the parovarium. There it is of no special interest, because the arrangement of the external and middle coats allows them to be readily separated from each other, and the Fallopian tube is related to the cyst-wall in the manner described by Dr. Bantock as peculiar to parovarian cysts; the fluid furnished by it also corresponds to that usually found in such a cyst. But if it is a monocyst of the ovary it then becomes of special interest, for it is denied by several recent writers (Bantock and Tait, for instance) that monocystic tumors ever occur in the ovary, but that when such a cyst is found it is always of parovarian origin. Now, that seems to be too sweeping a statement, for many eminent authors, among them Wells, Peaslee, and Atlee, speak of having met with unilocular ovarian cysts; and I can recall a case of a large monocyst removed by Dr. Goodell from a young lady of 20 years, in which the history, the relative position of the Fallopian tube to the cyst-wall, the close adherence of the different coats to one another, the albuminous fluid, rich in cells, and the absence of the ovary, pointed pretty clearly to ovarian disease rather than to parovarian.

I also present another specimen which proves beyond a doubt that a monocyst may occur, at least while the cyst is small. This specimen was removed by Dr. Goodell from a lady 22 years of age. It presents a single cyst in each ovary, and in addition a cyst in the broad ligament of one side.

Again, if the specimen first exhibited originated in the ovary, it presented an unusual feature in the character of its fluid, which was limpid and devoid of cells. If it did not spring from the ovary, why could not that organ be found? It could hardly be congenitally absent when all the organs in its neighborhood—Fallopian tube, broad ligament, and parovarium—were present.

Dr. GOODELL did not consider this cyst one of the ovary, simply because the corresponding ovary could not be found; for one cannot make a prolonged search at such a time. Besides, he had never seen such a clear fluid from an ovarian cyst. Again, another diagnostic point of a broad-ligament cyst is the alternations of tenseness and flaccidity. So this cyst was sometimes quite tense, and at other times so relaxed as to make it difficult to define its outlines. An ovarian cyst, on the contrary, is always tense, even if it has been recently tapped, but refilling. Further, the peritoneal and other layers of the wall of an ovarian cyst are so firmly matted together by the cicatrices made by the escape of Graafian follicles that they cannot be easily separated. In this specimen

the layers are, like those of a parovarian cyst, very easily torn apart. He had no doubt that the cyst is one of the parovarium.

Dr. T. M. DRYSDALE believed that a thorough search of the cyst might disclose the presence of the ovary, as he had in several cases of tumor of the broad ligament discovered the missing ovary spread over and incorporated in the cyst-wall. He also considered the limpid fluid, free from cells, an incontrovertible diagnostic point.

REVIEWS AND BOOK NOTICES.

POCKET-BOOK OF PHYSICAL DIAGNOSIS. By E. T. BRUEN, M.D. With Eight Wood Engravings. Pp. 256. Presley Blakiston, Philadelphia, 1881.

The volume before us is intended as a guide to the student and practitioner in making a diagnosis of diseases of the lungs and heart, and as such is an excellent book, full of practical hints and valuable points. It is divided into two parts, the first treating of the methods of diagnosis and of diseases of the thoracic respiratory organs; the second, of the diseases of the heart and pericardium, a chapter being devoted to each group of affections.

The pathological changes giving rise to the symptoms and physical signs are described in a concise and thorough manner at the beginning of each chapter, and the author refers to them again and again when he explains the physical signs of the particular group of diseases under consideration. In this way the student is led to reason out for himself the source of the sounds he hears when making an examination of the chest, and thus becomes independent of mere memorizing of sounds, which at best is a difficult task.

The illustrations—most of which are diagrammatic in character—are original and serve their purpose admirably. It would have perhaps been more convenient for the reader if they had been inserted in the text instead of having been appended as plates at the end of the book.

There are a few errors which by a little more careful proof-reading could have been detected and expunged. Otherwise, the whole exterior, as well as the typography, does credit to the publisher. C. S.

REFRACTION OF THE EYE, ITS DIAGNOSIS, AND THE CORRECTION OF ITS ERRORS; WITH A CHAPTER ON KERATOSCOPY. By A. STANFORD MORTON, M.B., F.R.C.S. Ed.; Senior Assistant Surgeon, Royal South London Ophthalmic Hospital; Clinical Assistant, Moorfields Ophthalmic Hospital. 8vo, pp. 57. Philadelphia, Presley Blakiston, 1881.

The author of this little book has shown knowledge and ability, but he has not shown the possibility of compressing so wide a subject into so narrow a space without sacrificing perspicuity to conciseness. It is at best a difficult undertaking to treat of the refraction of the eye, its diagnosis, and the correction of its errors, not only with test-glasses and types, but with the ophthalmoscope, by so-called keratoscopy, and by the indirect method, as well as by the usual, and only really practicable, direct method, in a way that will smooth the path of knowledge for "beginners and general practitioners." But to do this in fifty-seven pages of a small and not closely-printed volume exceeds the limits of possible condensation. Some of the text will be found close reading even for those who have considerable knowledge and experience of ophthalmic work, and its dictionary-like brevity will be more than discouraging to readers who are entirely unfamiliar with the subject. The author, in his preface, expresses the hope that his notes "will make evident the necessity which exists for personally working out a large number of refraction cases in order to acquire anything like proficiency in prescribing correct glasses;" in other words, that the only way to acquire a useful knowledge of refraction is to go to work patiently and perseveringly upon the eyes of patients. If the book be considered as a contribution to the proof of this fact, the beginner is likely to arise from its perusal with the impression that the *q. e. d.* has been satisfactorily established.

G. C. H.

GLEANINGS FROM EXCHANGES.

FATAL CASE OF GELSEMIUM-POISONING.—Dr. William Watkyns Seymour reports (*Boston Medical and Surgical Journal*, December 22) a case of poisoning in which two and a half ounces of the tincture of gelsemium had been taken after a drinking-bout, "to quiet the nerves." Two ounces of this amount had been taken during six or eight hours before the time when first seen, and the remainder immediately after. As no alarming symptoms presented themselves until after the last dose, nothing special seems to have been done beyond watching the patient. When seen the second time, he had lost control over motion, and speedily became unconscious. Emesis was induced by sulphate of zinc. Brandy was then given, ʒij hypodermically and ʒj *per recto*, followed by faradization of the diaphragm and intercostal muscles, with but temporary benefit. Atropia (one-fortieth grain, hypodermically), nitrite of amyl inhalations, and carbonate of ammonia by the mouth were also tried, but without success, the patient dying comatose and cyanotic six hours after the ingestion of the last dose. The faradic current when at first used was prompt and satisfactory, but it seemed later to lose its power.

DISEASE OF THE BRONCHIAL GLANDS.—Dr. De Castro, writing to the *London Medical Times and Gazette*, December 17, gives three typical cases of disease of the bronchial glands occurring in young and middle-aged persons, and which disease he agrees with Dr. Quain in asserting is frequently overlooked or mistaken for other maladies of the lungs in adult and advanced periods of life. In these cases the most prominent symptoms were habitual imperfect respiratory power, shown by a certain amount of embarrassment in breathing, especially under stress of exertion; liability to asthmatic attacks; slight cough and expectoration; some pain in the chest; in some cases hæmoptysis; altered voice, and extreme thinness without progressive emaciation. The physical signs were slight dulness anteriorly, somewhat below clavicle on one side or both, requiring strong percussion to develop, with decided dulness posteriorly below scapula corresponding. These cases were at first thought to be tubercular, but were finally diagnosed as disease of the bronchial glands; and in one case a post-mortem examination confirmed the diagnosis. The history of "bronchial gland disease," when occurring in early life, is almost identical with that of acquired collapse of the lung, or apneumatosis; but the developed diseases have certain differences. To defective respiratory power and embarrassment of breathing characteristic of apneumatosis, there are in bronchial gland disease generally superadded indications of intrathoracic centripetal pressure,—viz., alterations in the character of the voice, paroxysmal attacks of difficulty of breathing, hæmoptysis, pain; and the same differences exist as between the malady under consideration and pneumic and fibroid consolidation of the lungs, excepting always hæmoptysis, which is not infrequent in fibroid disease of the lung (cirrhosis). The chief seat of dulness in apneumatosis is the mammary region and the base of the lung. In bronchial gland disease the dulness is most marked posteriorly about the margins of the scapulæ: what dulness exists anteriorly generally requires rather strong percussion for its development, and is manifestly derived from the posterior condensed tissues.

INJURY TO THE CERVICAL PORTION OF THE SYMPATHETIC NERVE IN REMOVAL OF A SARCOMA—MYOSIS.—In the course of the removal of a sarcoma of the size of a small orange from the upper portion of the right anterior triangle of the neck, by Dr. Chavasse (*British Medical Journal*, December 17), it became necessary to dissect away the trunks of the pneumogastric and cervical sympathetic nerves to which the tumor had become adherent. At the conclusion of the operation the pupil of the right eye was seen to be contracted to the size of a pin's head. Three days later the pupil was still irregularly contracted as at the conclusion of the operation, but acted under stimulus of a strong light. There was also drooping of the palpebral fissure; but the sight was unimpaired. There had been frequent and distressing vomiting. A few days later, a few drops of atropine were placed in the affected eye, but the pupil dilated very slowly under its action. Two months after the operation, the pupil was still contracted irregularly, and responded but slowly to changes in the intensity of light. The accommodation was good, and vision equalled $\frac{15}{XV}$. Two months later, the narrowing of the palpebral fissure was hardly perceptible; ptosis was slight; pupil larger than it had been, but not of the same diameter as its fellow; no emaciation of cheek, and no flushing or redness of conjunctiva. In six months after the operation, all the oculo-pupillary symptoms had much improved; but since that time they have remained *in statu quo*. Fifteen months have now elapsed, and it seems doubtful if the normal condition will ever be regained.

SCIATIC NERVE-STRETCHING IN LOCOMOTOR ATAXY.—Dr. John Cavafy (*British Medical Journal*, December 10 and 17), commenting upon nineteen cases, collected, of stretching of the sciatic nerve in locomotor ataxy, says that it is probable that benefit is always to be expected from the operation so far as the pains are concerned, but that the prospect of improvement in the ataxy is much less certain. He is inclined to think that the operation is applicable especially to early cases and where pain is a prominent symptom, but should not hesitate to employ it in later ones also, as it has not been followed by any injurious results beyond temporary paralysis, and this very rarely. The rupture of a vein in one case, and the venous thrombosis and erysipelas in two others, he considers as mere surgical accidents. He urges the desirability of coming to some agreement as to the mode of operating, and especially as to the force to be employed,—such expressions as "strongly," "violently," etc., being but relative terms and capable of varying interpretation. In conclusion, he writes, "So far as we know, a forcible extension of a nerve, when not excessive, is followed by temporary paralysis only, and, further, the operation seems to act on the spinal cord as well as on the nerve itself."

MISCELLANY.

OPIUM IN CHINA.—According to the report of the Inspector-General of Customs of China, only two-thirds of one per cent., or 2,000,000 of the population of 300,000,000, choose to consume opium. The annual importation of the drug into the country amounts to 100,000 chests of 133 pounds each, about one-third

of which is, however, lost in its conversion into prepared opium. The home production amounts to as much as that imported, and together with it costs about £25,000,000 annually. Five drachms is the calculated average amount used by each smoker daily, and fivepence to elevenpence its cost. It is claimed that the drug prevents the waste of tissue, and is to the poor Chinaman what tea is to the same class in the United Kingdom; while a protest is made against its being bracketed with alcohol in one sweeping condemnation, as the latter is only a temporary stimulant, while opium may, in time of famine, take the place of food. It is claimed by Sir C. E. Trevelyan that if the growth of opium were interdicted, the country would be overrun with smugglers, and that if the government gave up the monopoly, and levied only an excise, its responsibility would still remain, whilst the control of the growth and manufacture would be rendered more difficult.—*Medical Times and Gazette*, December 10.

THE FRENCH SOCIAL PROBLEM.—At the beginning of the present century, with a population of not more than twenty-seven millions, there were actually more births in France than took place in the year 1880. M. Legrand, in his well-known essay on "Le Mariage et les Mœurs en France," states that between 1800 and 1815 the number of children born per marriage averaged 4.24; since then it had sunk gradually, and in 1860 averaged only 3.03 for the five preceding years. It rose again until 1865, but has since declined, and in the year 1871, the date of the Franco-German war, reached its lowest depth of 2.26. In 1872 the average rose to its highest for the last few years,—namely, 2.67; and in 1877 it was 2.55. M. Legrand asserts, on the strongest possible grounds, that this decrease in the birth-rate of his country continues, and is becoming more marked as the years go by. It is a noteworthy and perhaps ominous fact that lately the number of marriages have not decreased. Indeed, there are actually more marriages per cent. in France than in England, the average per hundred being in the former .88 and in the latter .86.—*Medical Press and Circular.*

IN a recent issue of *Nature*, Prof. Graham Bell refers to the statements attributing heredity of dialect to deaf-mutes who have been taught to speak, and says that during the past few years he has examined the pronunciation of at least four hundred deaf-mutes who have been taught to speak. He adds that it is true that in a few cases dialectic pronunciations are heard, but it always turns out upon investigation that such children could talk before they became deaf.

NITRITE OF AMYL is alleged to be an effectual remedy in chordee and painful priapism. Three to five drops, by inhalation, is the proper dose.—*British Medical Journal.*

DR. M. B. MANN has been appointed to the Obstetric Chair in the Buffalo Medical College, made vacant by the death of Prof. J. P. White.

NOTES AND QUERIES.

CORRECTION.

IN the discussion following Dr. Seiler's paper on an improved galvano-caustic battery (vol. xi. p. 762), Dr. W. R D. Blackwood is reported as observing that "he saw an advantage in connecting the battery *beneath* the fluid,"—a statement which is not only erroneous but absurd. What Dr. Blackwood *did* say was that "in the battery arranged by himself the plates projected *above the element-board*, were connected completely outside the cell, and thus thoroughly isolated from the fluid or fumes, which in time destroyed the connections as usually made. The commutator was arranged to connect in one position the eight carbons (anode) together, and the like number of zincs (cathode), forming a single pair for quantity or galvano-caustic effect; and by a quarter-revolution the plates were connected in multiple series for intensity, and were then available as a motor for driving the static machine."

I had not noticed this until now, and desire to have my remarks correctly reported. Very truly,

W. R. D. BLACKWOOD.

January 12, 1882.

PHILADELPHIA, January 21, 1882.

EDITOR PHILADELPHIA MEDICAL TIMES:

DEAR DOCTOR,—I clip the following from the *Medical News* of this date, and hasten to send it to you, as it will give you satisfaction to see the little crumb cast so recently upon the waters return from its long journey in so good a state of preservation, unadorned by any finishing touches of æstheticism, not waterlogged nor soured by any tenets of Irish land-leaguism. Originating in a few suggestions made by me before the Philadelphia County Medical Society, and reported *verbatim* in your valuable journal, it now returns once more to its place of birth, with virginal purity. "No man is a prophet," etc.

"Albumen-water is recommended as a good substitute for milk and beef-tea in cases where these substances disagreed with the patient or could not be obtained. The preparation is largely used by the French. It is made by dissolving the white of one or more eggs in a pint or two of water, sweetening with glycerin, and flavoring with orange-flower water. It may be taken cold and used *ad libitum*. It is an excellent food in typhoid fever and typhoid dysentery."—*Dublin Journal of Medical Science*, September, 1881.

Yours truly,

J. M. K.

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY FROM JANUARY 8 TO JANUARY 21, 1882.

GARDNER, WM. H., CAPTAIN AND ASSISTANT-SURGEON.—Now at St. Augustine, Fla.; to proceed to San Antonio, Texas, and report in person to the Commanding General, Department of Texas, for assignment to duty. S. O. 14, A. G. O., January 19, 1882.

LA GARDE, L. A., FIRST-LIEUTENANT AND ASSISTANT-SURGEON.—Granted leave of absence for one month, to take effect on arrival of Acting Assistant-Surgeon Collins at Cantonment on the North Fork of the Canadian River, Ind. T. S. O. 12, Department of the Missouri, January 16, 1882.

BIRMINGHAM, H. P., FIRST-LIEUTENANT AND ASSISTANT-SURGEON, who returned to Fort Leavenworth, Kans., on 12th instant, from leave of absence, to proceed to Fort Gibson, Ind. T., and report to the Commanding Officer for duty, relieving Acting Assistant-Surgeon Collins. S. O. 12, c. s., Department of the Missouri.

WHITEHEAD, W. E., CAPTAIN AND ASSISTANT-SURGEON.—Died at Tarrytown, N.Y., on January 15, 1882.